MONTHLY PROGRESS REPORT ★ SECTION 7

19
(1015)

CLASSIFICATION CHANGED
TO RESTRICTED
AUTH ASF Cir 91 - 10 APR 46
DATE: 24 APR 46 Charles S. Juliand
CHARLES S. JULIAND, Capt., MAC
Asst. Security Officer, SGO

SPMC 720.1

HEALTH

CLASSIFICATION CHANGED
TO UNCLASSIFIED
AUTH EO 501
DATE 2 Sept 55
SECURITY OFFICER
Frank B Rogers

[redacted]

31 MAY 1944

37

43452 19
S.G.O. No. 43452

ARMY SERVICE FORCES ★ WAR DEPARTMENT

43452

CONTROL APPROVAL SYMBOL

CG-14

HEALTH

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OFFICE OF THE SURGEON GENERAL

HEADQUARTERS, ARMY SERVICE FORCES, WAR DEPARTMENT

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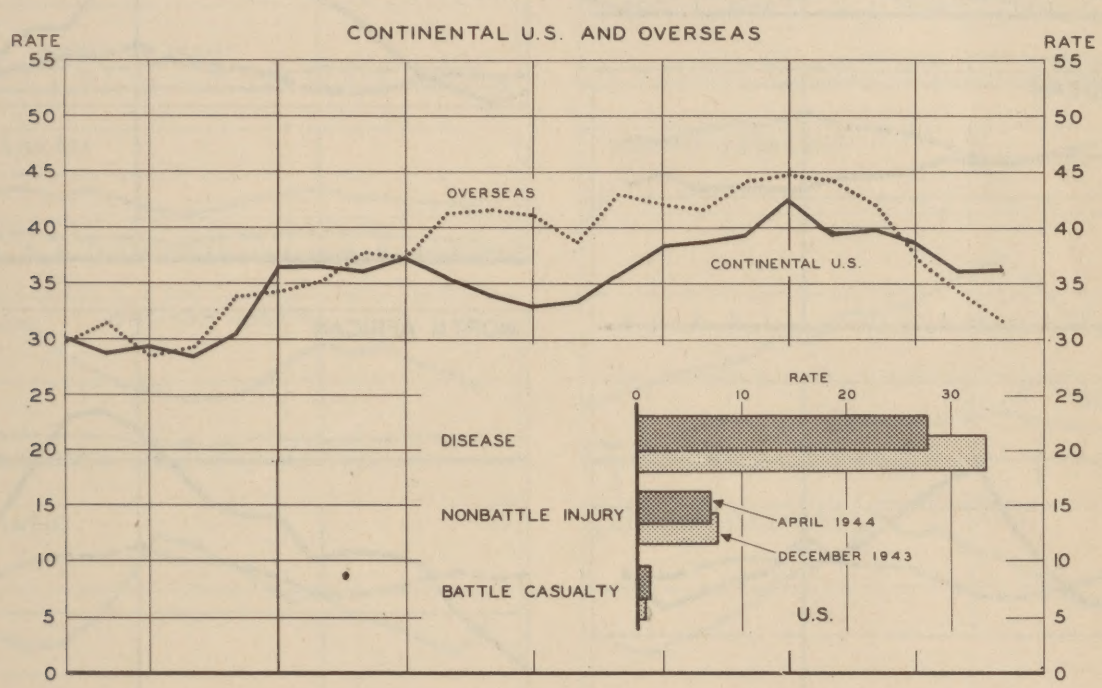
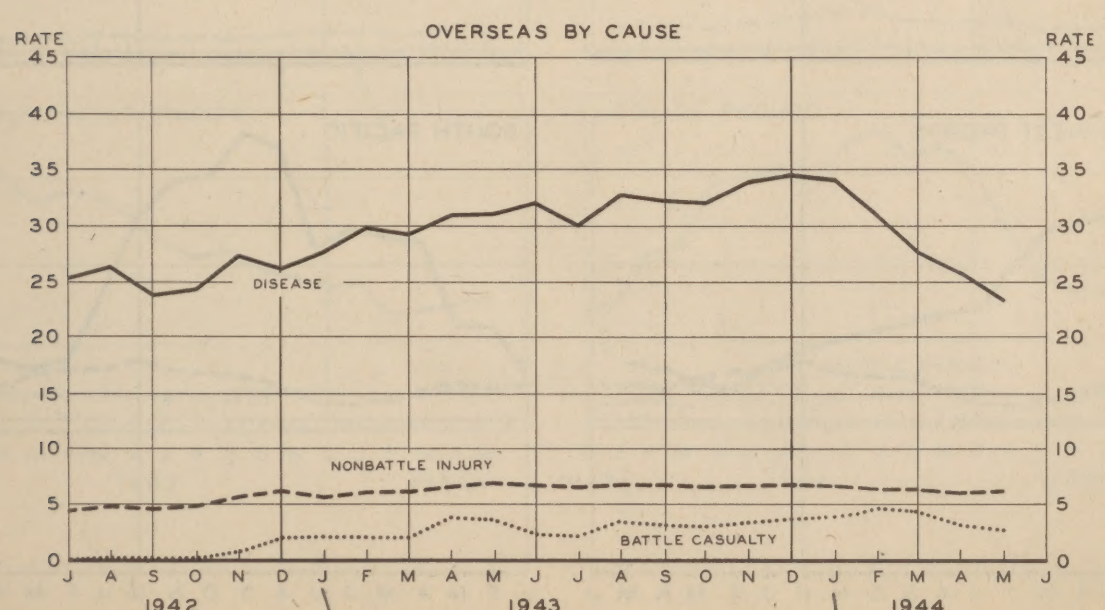
NONEFFECTIVE RATES, U. S. AND OVERSEAS

During May the average daily noneffective rate for troops in the Continental U. S. fluctuated about a level of 36 noneffectives per thousand men per day, the same as that for April. The rate for troops in the U. S. is no longer a true measure of health conditions in the U. S., however, because the admission rates have been declining steadily since December without any corresponding decrease in noneffectiveness. This is attributable to the hospitalization of evacuees, who contribute about 5 noneffectives per thousand U. S. strength, and to patients left behind by units moving overases. This latter group may contribute as much as 1 to 3 noneffectives per thousand U. S. strength per month at the present time. Corrected for the influence of these two factors, the U. S. rate is more nearly 28 to 30 noneffectives per thousand men per day, below the provisional overseas rate of 32 for May which, in turn, might be "corrected" to about 38 if evacuees were counted against its strength. The overseas rate has declined steadily for five months. The inset panel in the first chart below provides comparative estimates of the disease, nonbattle injury, and battle casualty components of the uncorrected U. S. noneffective rate for April 1944 and December 1943. The chart at the bottom of the page presents the trend in each of the components of the total noneffective rate overseas.

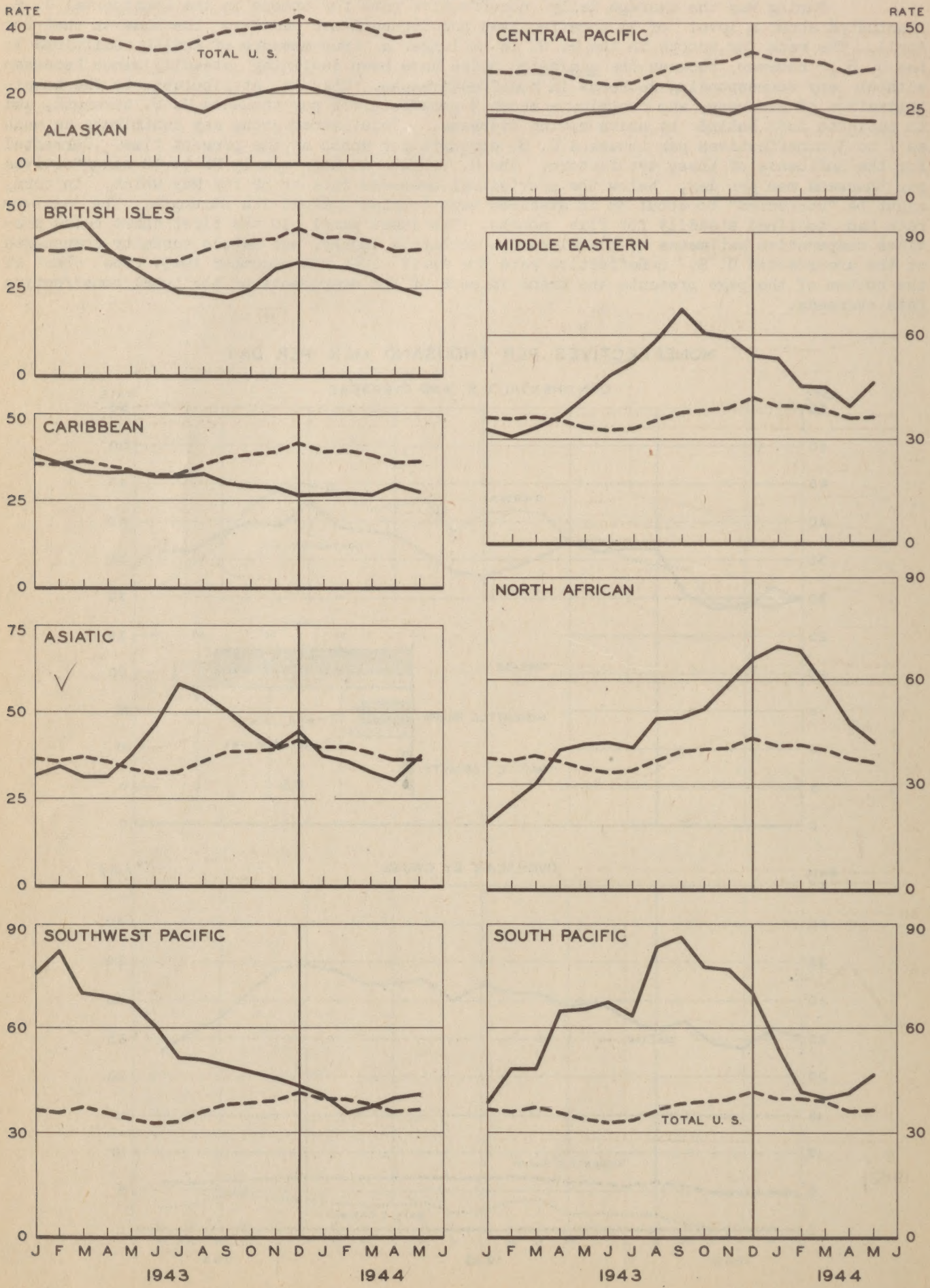
NONEFFECTIVES PER THOUSAND MEN PER DAY





NONEFFECTIVES PER THOUSAND MEN PER DAY

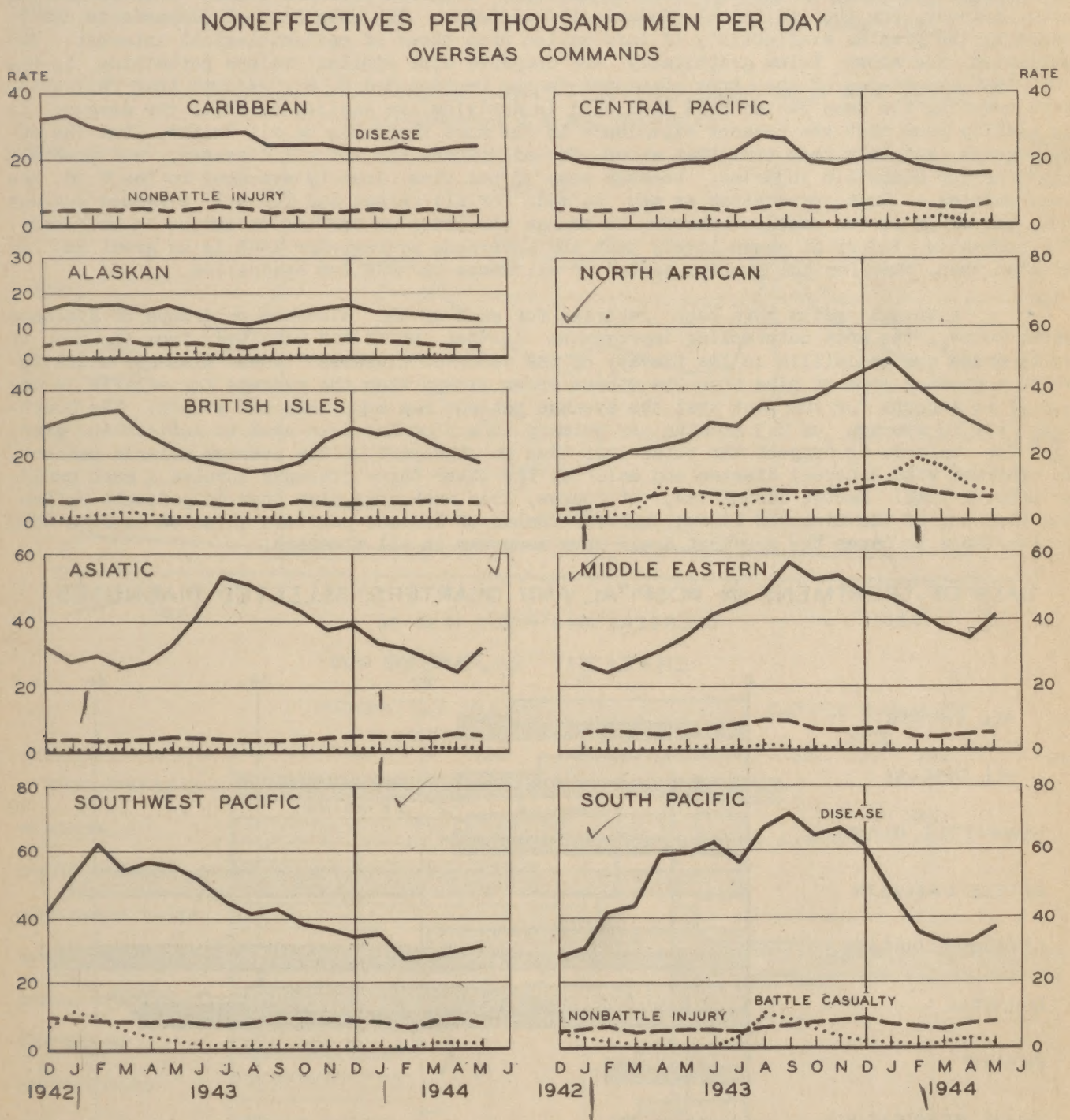
ALL CAUSES, OVERSEAS COMMANDS



DISEASE AND INJURY

NONEFFECTIVE RATES OVERSEAS

During May the average noneffective rate declined for the Army overseas, but increases were reported for the South Pacific, Southwest Pacific, Asiatic, and Middle Eastern Theaters. These changes were caused primarily by increases in the noneffectives associated with disease, but the nonbattle injury component also rose in the South Pacific. In the chart below, the total rates shown in the panels across the page are separated into the elements attributable to disease, nonbattle injury, and battle casualty. Points for the most recent months are based upon provisional radio reports, some of which have been found to be subject to considerable error. The North African rates for May are based on the first three weeks of the month, which explains the apparent decline in noneffectiveness because of battle casualty.



DISEASE AND INJURY

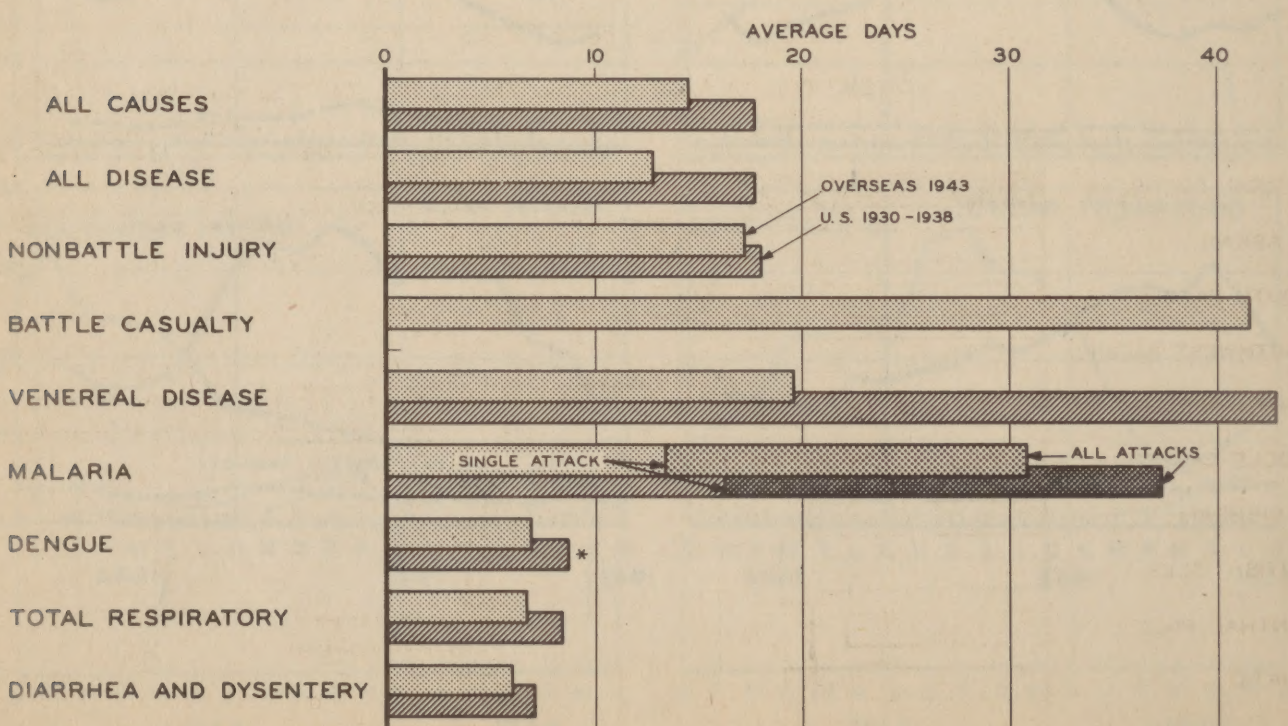
AVERAGE DAYS LOST PER ADMISSION TO HOSPITAL OR QUARTERS OVERSEAS

Much of the military significance of admission rates derives from the length of time the average patient remains noneffective. If the first responsibility of the Medical Department is to prevent such diseases and injuries as are, in fact, preventable, no less great is its obligation to return men to duty as promptly as possible. The importance of disease and nonbattle injury in determining the need for replacements, for example, is so great that any reduction in the number of days lost per admission is a contribution to the military effectiveness of the force involved.

Because of the interest which attaches to the average time lost per admission to sick report, provisional estimates have recently been made for certain causes of admission overseas. Such estimates tend to be too low for any diagnosis which is an important cause of evacuation, for some of the lost time is excluded from the overseas count. This is not the case, however, for the individual diseases listed below. The selection of diseases is determined by the greater availability of information upon those of epidemiological interest. The estimates are shown below graphically and compared with similar values pertaining to the 1930-1938 experience of the Army stationed in the Continental U. S., except that Philippine data covering the same period have been used in deriving the earlier estimate for dengue. It is readily seem that the present experience is the more favorable on all counts, but the advantage is slightly less than that shown for all causes and for all diseases, and probably spurious for nonbattle injuries, because some of the time lost by evacuees to the U. S. has been omitted. Such corrections as may be made for all causes and for all diseases suggest that the error is too small, however, to change the order of the two estimates in each case. For nonbattle injury it seems likely that the overseas average for 1943 is as great as, or greater than, that for the earlier period if allowance be made for evacuation.

Although gains have been recorded for each of the diseases or groups of diseases shown below, the most outstanding improvement is that which has resulted from the use of sulfa drugs and penicillin in the therapy of the venereal diseases. These diseases still involve a greater loss of time than the others shown except when the average for malaria is adjusted to account for the fact that the average patient has more than one attack. The Southwest Pacific average of 2.3 attacks per primary infection has been used to inflate the averages for malaria to suggest the total lost time on the part of the average malaria patient. In contrast with venereal disease and malaria, the other three diseases involve a much smaller loss of time. Battle casualties, of course, lose much more time than do patients suffering from any of the diseases listed, but the number of disease patients involved is such that it continues to cause the greatest drain upon manpower in all theaters.

DAYS OF TREATMENT IN HOSPITAL AND QUARTERS, SELECTED DIAGNOSES
OVERSEAS 1943 — U. S. 1930-38



* Enlisted U. S. troops in Philippines.

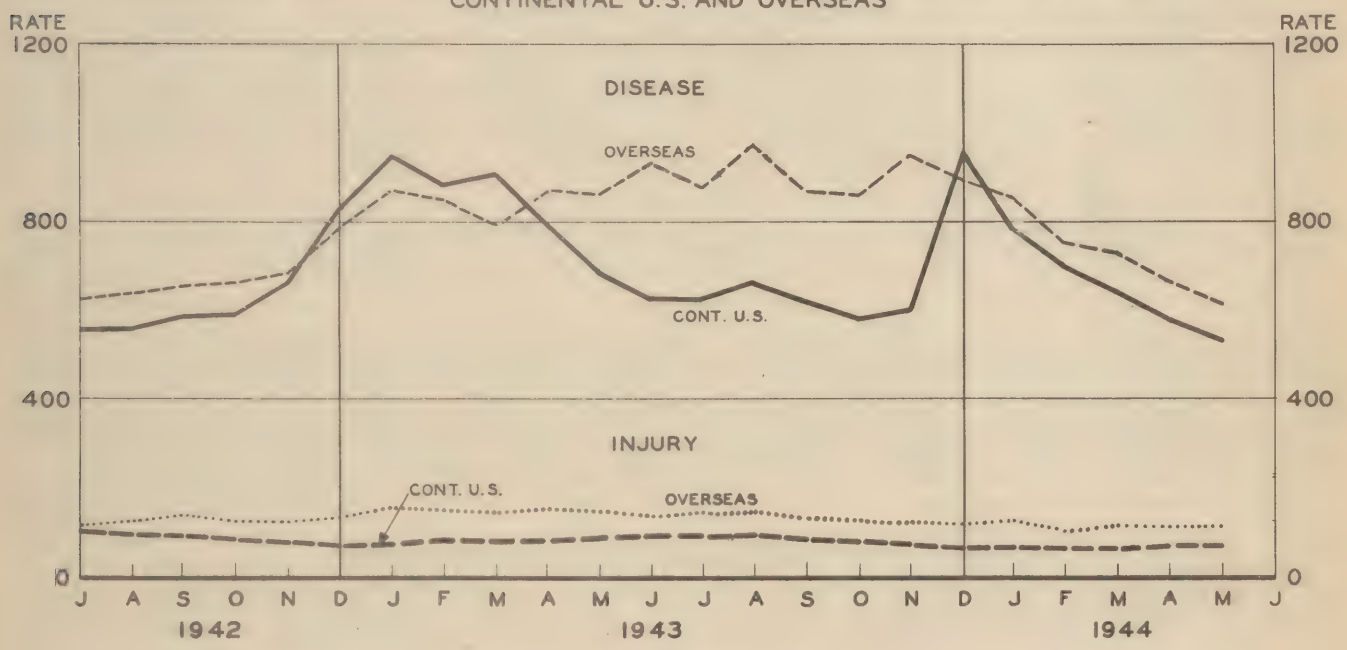
DISEASE AND INJURY

During May there was a further decline in the admission rate for disease, both in the U. S. and overseas. The preliminary rates are 535 and 615 admissions per thousand men per year. The admission rate for nonbattle injury in the U. S. rose a few points to reach 68 during May, and the provisional overseas rate also increased slightly to 115 per thousand men per year.

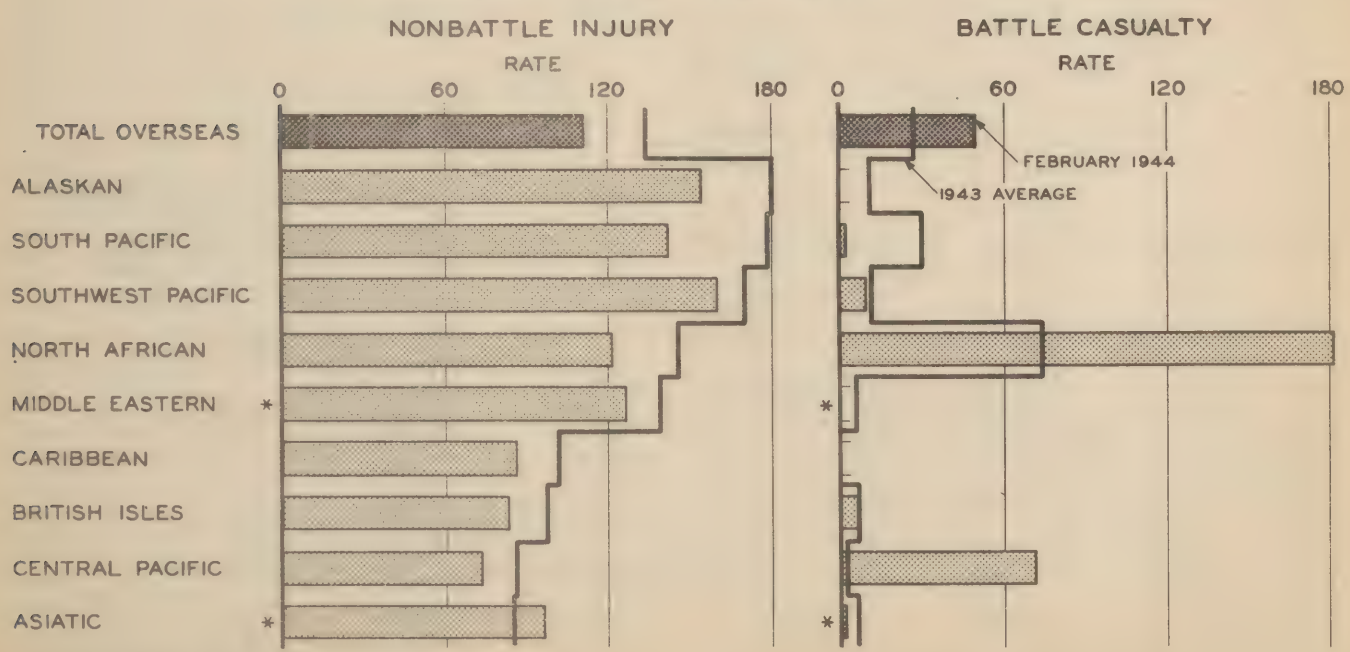
During 1943 nonbattle injuries overseas involved a loss of almost 4 million man-days and battle injuries perhaps half this amount. The panel at the bottom of the page gives the incidence of battle and nonbattle injury in the various theaters during February 1944 against the background of their average experience during 1943. The apparent decline in the nonbattle injury rate in the South Pacific may be attributable to corrections in the method of reporting on the part of the theater. The battle casualty rate of 72 for the Central Pacific area in February reflects the influence of the Marshall Islands operations.

DISEASE AND INJURY, ADMISSIONS PER THOUSAND MEN PER YEAR

CONTINENTAL U.S. AND OVERSEAS



OVERSEAS THEATERS



* 1 January 1944.

DISEASE AND INJURY

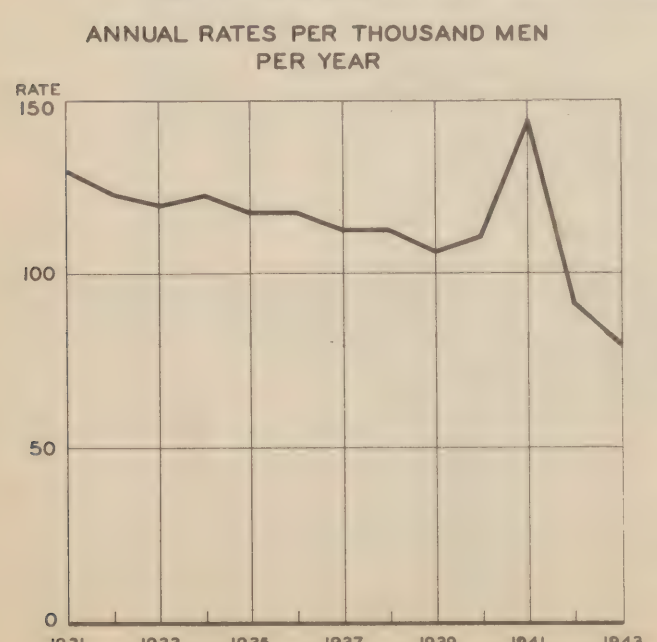
INJURIES TO MILITARY PERSONNEL

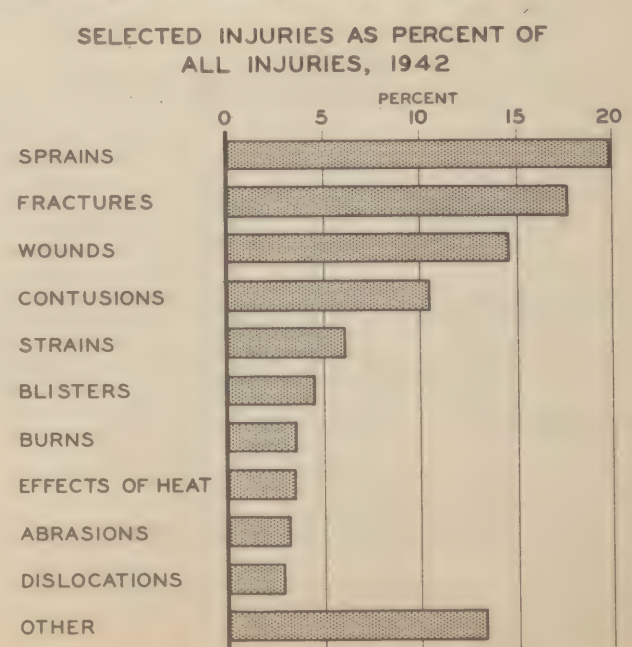
Although the admission rate for nonbattle injuries among troops in the U. S. has declined since 1941, when the relatively high admission rate of 144 per thousand men per year was recorded, there were more than 400,000 such admissions during 1943, equivalent to a rate of 80 per thousand strength for the year. The chart below gives the trend for the years 1931-1943. The indications are that the rate of injury has been highest for the Army Ground Forces and also somewhat above average for troops assigned to the Army Service Forces. Perhaps the most significant problem raised by the incidence of nonbattle injuries is the extent of the noneffectiveness which they cause. The extended period of treatment for injuries results in a noneffective rate which is higher than would be expected from the admission rate alone.

In an attempt to decrease the noneffectiveness attributable to nonbattle injuries, a safety program has been inaugurated in the U. S. for the Army Service Forces and plans have been made for some extension of this program to the Army Ground Forces. The Army Air Forces have a safety program with special emphasis upon flying safety. By its safety program the Army Service Forces contemplates the development of practical doctrine and the issuance of texts, manuals, and other aids in the teaching of accident control. The Surgeon General not only assumes an advisory role in respect to these activities but also is responsible for the provision of basic statistical data on the incidence, severity, and causes of injuries among military personnel. The reporting system will provide essential information on the nature of the activities involving accidents and the causative agents involved, which may indicate the principal "unsafe" conditions and types of "unsafe" behavior responsible for accidents. Such data are essential to the formulation and execution of control measures.

The experience of the Army in the Continental U. S. and overseas during this war illustrates the great need for a safety program. Detailed information on types of injury are available only for 1942, but it suffices to indicate the direction which any safety program must take. Almost 40 percent of all injuries which caused a loss of time greater than one day were attributable to fractures, dislocations, and sprains. These are injuries typically associated with training activities and are believed to account for the majority of the injuries sustained on duty. They thus furnish the greater part of the objective of any control program. Sprains alone accounted for almost half of the injuries in this category, and were the most frequent type of injury sustained during the year. Over-exertion and strains (including ruptures) were responsible for about 6 percent of all injury admissions. Sunstroke and other injuries incurred as the result of over-exposure to heat were responsible for about 3.5 percent, while admissions attributable to the effects of cold accounted for less than .5 percent of the total admissions. There were 445 suicides in the Army during 1942, and the rate was the same as that for 1941, but both years were at a much lower level than previous years. Preliminary data indicate that the 1943 suicide rate was only about half that for 1942. The accompanying chart gives a percentage breakdown of 1942 admissions by cause.

NONBATTLE INJURY, ADMISSIONS IN THE CONTINENTAL U.S.





FILARIASIS

The presence of filariasis on the eastern islands of the South Pacific Area has created a troublesome problem for troops stationed there, although the incidence has never constituted any threat to combat operations. Navy (Marine Corps) personnel stationed ashore have suffered far more than Army personnel, however, because of their distribution and longer stay on certain islands where the infection is most prevalent. Although the disease is also endemic in the islands of the western Pacific and along the eastern coast of the Asiatic mainland, areas where active operations may be anticipated, it is not expected that the experience in the South Pacific will be repeated in these areas. There were, however, 23 cases reported in March among personnel in the Central Pacific Area. It is not yet known whether actual transmission occurred in this area or in the South Pacific.

Filariasis is a common tropical disease (see HEALTH for December 1943) noted for its serious complications in the chronic stage. A mosquito-borne disease, it develops only after repeated infection over a period of many months, and lacks the explosive potentialities of malaria and dengue. Neither Army nor Navy patients have yet developed any consequential elephantiasis (enlargement) of the upper or lower extremities or of the scrotum, symptoms of the chronic stage so feared by those who have been exposed to the infection. Although it is still too early to be sure the management of these cases has successfully forestalled the progress of the disease to a chronic stage, experience to date indicates that permanent ill-effects are unlikely to occur. Patients found to have filariasis have been promptly removed from the area of infection and usually evacuated to the U. S., giving the disease some importance as a cause of evacuation. During the five months ending 31 March 1944, about 550 patients with a primary diagnosis of filariasis were evacuated to the U. S. In the past month filariasis has caused the return from the Southwest Pacific of two Army units, one of battalion and the other of company size. It has been estimated that about 75 percent of the personnel of these units are infected with filariasis. Both units are being segregated for further observation and treatment in the U. S. Infection is known to have occurred in the South Pacific Area.

The accompanying tables summarize the reported experience in the South Pacific through February. It is understood that certain of these islands have been vacated of troops to the extent permitted by the tactical situation, and as action develops further to the west it is expected that the problem of filariasis will diminish in importance. Filariasis is also endemic in the Latin American area, but no cases have thus far developed among troops from the Continental U. S.

ADMISSIONS FOR FILARIASIS, SOUTH PACIFIC AREA

Monthly Incidence*

Month	Total Cases
1943 J	1
F	4
M	0
A	1
M	1
J	0
J	48
A	15
S	23
O	62
N	193
D	116
1944 J	181
F	151

Percent of Cases Diagnosed on Various Base Islands**

Base	Percent of Cases in South Pacific
Aitutaki	34.2
Bora-Bora	33.8
Tongareva	24.7
Samoa	2.5
Fiji	2.5
Espiritu Santo	1.0
Tongatabu	.9
Efate	.1
Guadalcanal	.1
New Georgia and Rendova	.1

* Cases during first 8 months of 1943 are probably too low, as may be the entire series.

** Those of zero incidence being omitted.

EUROPEAN INVASION HEALTH PROBLEMS

Although invasion of Europe, from whatever direction it be made, should not involve health problems comparable to those of the Southwest Pacific, nevertheless, serious hazards will be encountered by military forces on all fronts. Outstanding among these are malaria, typhus, diphtheria, the dysenteries, and the venereal diseases.

Northwestern Europe normally presents health and sanitary conditions not greatly dissimilar from those of the United States. The general sanitary standard is high, decreasing as one moves southward. Water supplies in the larger cities could be trusted before the war, but all rural facilities had to be considered as contaminated.

A long-standing focus of malaria exists in North Holland, northwest of Amsterdam, where the disease is spread by mosquito breeding in ditches of brackish water. Infection is acquired during the period from June through December, but the actual cases do not appear until the following spring. Although occasional cases have been found elsewhere along the channel coast, no serious permanent foci exist. At the mouth of the Loire on the west coast of France, there is, however, another small focus of malaria.

Diphtheria offers a serious problem throughout northwestern Europe at the present time. In Holland, for example, there were over 55,000 reported cases in 1943 as contrasted with less than 1,100 in 1939; in Norway there were over 14,000 in 1943 as contrasted with less than 100 in 1939. All countries of this area have experienced a sharp increase, although not quite as severe as in the case of Holland and Norway. The incidence has been attended with a high case fatality rate and an unusually large proportion of adults have been affected. The situation is more serious than has been seen in the United States for many decades.

Typhus unquestionably exists in northwestern Europe, although to a much less degree than in eastern or southeastern Europe. The scarcity of soap and the crowded housing conditions have, however, sharply increased the degree of lousiness with the result that the stage is set for serious epidemics unless proper control measures are taken.

Epidemic jaundice (infectious hepatitis) has been fairly common throughout northwestern and central Europe for two years. A great many cases of the disease may be expected. In addition, another form of jaundice (leptospiral jaundice or Weil's disease) occurs along the channel coast, especially in the Netherlands, caused by contamination of the canals and ditches by the excreta of infected rats; the infection may be acquired merely by wading in these waters.

Venereal diseases, notably syphilis, have increased several fold and it is quite apparent that scabies and intestinal infections are far more wide spread in the civil population than normally. The nutritional condition of the people is poor but not as severe as in the southern Balkans.

EUROPEAN INVASION HEALTH PROBLEMS (Continued)

The Mediterranean invasion coast presents more serious hazards, especially in the Balkans.

The problems of southern France are markedly less serious than those of Italy. A minor focus of malaria exists on the French coast from Toulon to the Pyrenees, most serious around the mouth of the Rhone. A form of tick typhus (fievre boutonneuse) exists along this coast but it is not of serious moment for troops. Dengue and sandfly fever may occur. The southern coast of France has for years been characterized by the highest intestinal infection rate of any part of France because of poor water supplies and extensive use of contaminated shellfish (chiefly mussels) which grow abundantly on the foreshores and are gathered as "poor man's food".

The Balkans present the most serious problems in Europe. The diseases of chief military importance are malaria, typhus fever, and the intestinal infections. During the last war, malaria completely immobilized both armies. Some parts of the Balkans are comparable with parts of the Southwest Pacific in the severity and extent of the malaria problem. Malaria occurs both on the coast where it is spread by a mosquito breeding in brackish swamps and in the hills where it is spread by a stream breeder. In general, the season runs from May through October with its peak around August.

Typhus is hyperendemic in the Balkans and may at any time flare up into an extensive epidemic comparable to the devastating outbreaks of the last war. The degree of louse infestation in this area is normally greater than in northwestern Europe and during the war has unquestionably increased sharply.

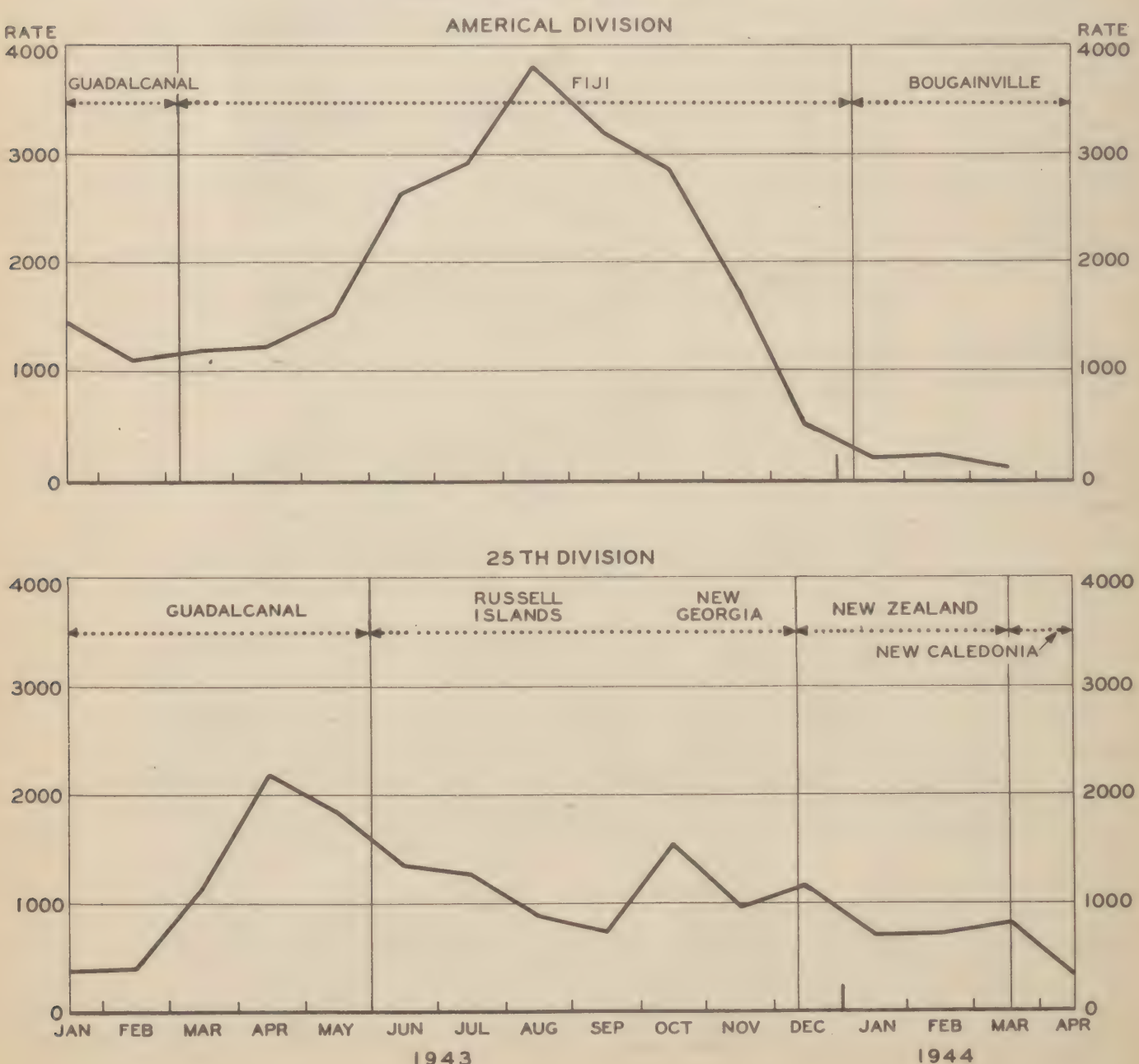
Dysentery and typhoid are normally widespread throughout the Balkans and during the past winter have been much more so than usual. Dengue and sandfly fever occur here periodically, and epidemic jaundice has been prevalent. The Balkans have not experienced the same increase in diphtheria as described in northwest Europe but for several years have had a very malignant form of scarlet fever. Nutritional conditions, especially in Greece, are decidedly poor.

Throughout Europe there has been a sharp increase in tuberculosis. Southern and eastern Europe have always had a high tuberculosis rate, much greater than that of the United States, England, or the northwestern part of Europe. Malnutrition, crowding, and lack of normal medical and public health care have undoubtedly been factors in the increase which has occurred in all parts of the continent, including Germany.

MALARIA CONTROL IN THE SOUTH PACIFIC

The lesson of malaria control is indelibly written in the history of the combat divisions which have set foot on Guadalcanal. First the Americal Division, then in turn the 147th Infantry Regiment, the 25th Division, and the 43rd Division, entered the malarious areas of this theater and became heavily infected with malaria parasites. But the 37th Division, which moved to Guadalcanal in March and April 1943, was withheld from combat and bivouacked in a choice portion of the island; it achieved a high degree of malaria control through effective application of group and individual methods. When the 40th and 93rd divisions arrived in Guadalcanal during December 1943 and the early months of 1944, they entered an area under good temporary field control, and possessed adequate supplies of aerosol "bombs", nets, and repellent. They also came well trained in the dangers of malaria and with excellent atabrine discipline. This presents a marked contrast with the conditions which prevailed in 1942 when there was little or no field control, no repellent or aerosol "bombs", and the troops were forced to fight and live in hyperendemic areas without adequate protection against mosquitoes. Although atabrine suppression was prescribed at that time the regularity of its use is questionable.

MALARIA, ADMISSIONS PER THOUSAND MEN PER YEAR
COMBAT DIVISIONS, SOUTH PACIFIC

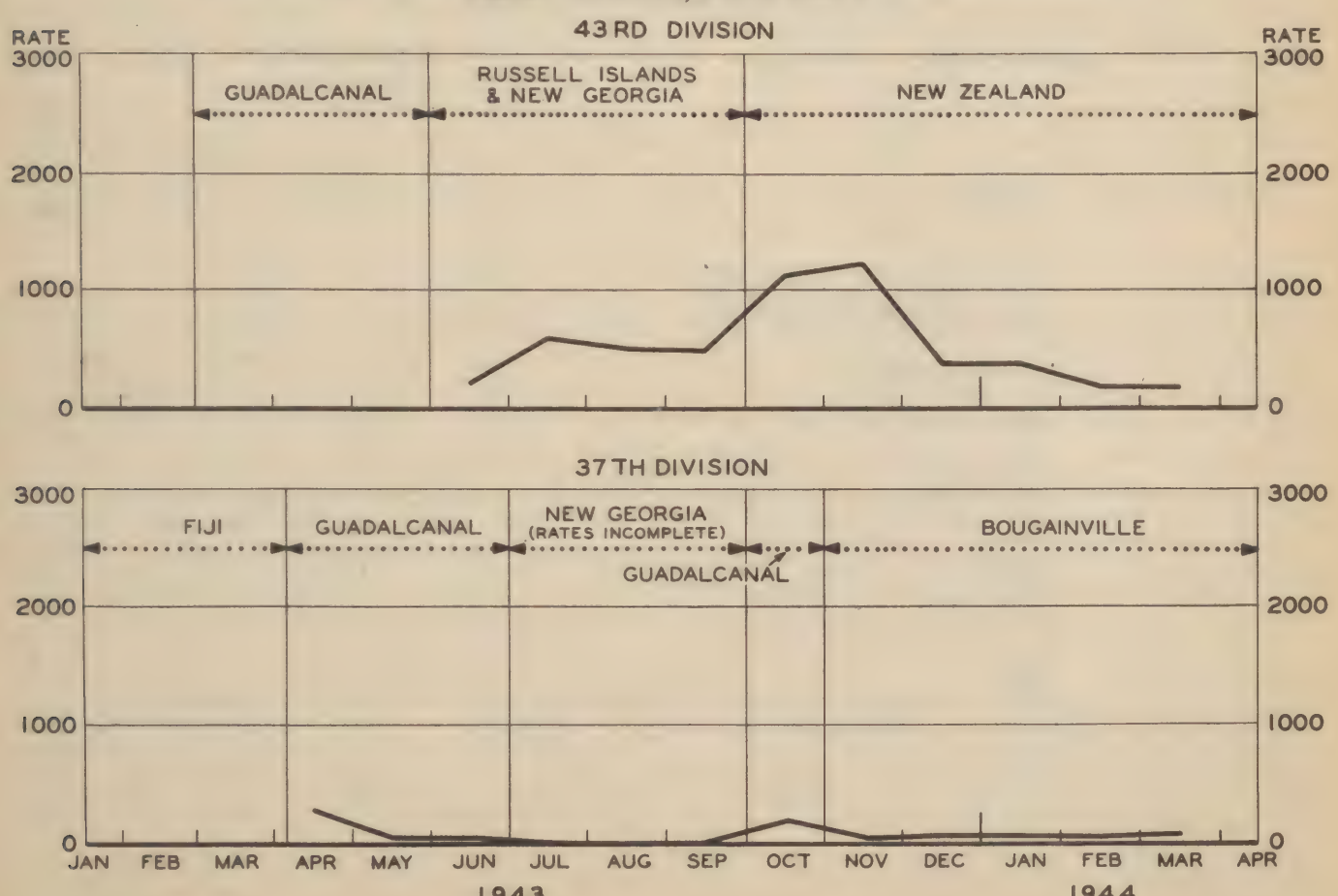


MALARIA CONTROL IN THE SOUTH PACIFIC (Continued)

The charts below and on the previous page give a rough outline of the malaria history of certain of the combat units mentioned above. The experience of the Americal Division was shown in HEALTH for December 1943. In November 1943, the division was again placed on suppressive atabrine treatment. Its recent rates present a striking contrast with those of its first year in the theater; the validity of this improvement is supported by the history of the 37th, 40th and 93rd divisions. Two factors, both of tremendous importance, have been at work. In the first place, transmission has been reduced to a minimum by effective mosquito control measures in garrison areas and also to a certain degree in combat areas. In the second place,as shown so vividly by the rates of the Americal Division, the need for effective suppression of relapses has been learned from the bitter experience with repeated relapse in infected units taken off suppressive atabrine. There was no combat on Guadalcanal in December 1943, when the 40th Division landed there; its protection against malaria was assured by the effective sanitary control now exercised. The Americal Division was in a non-malarious area between 1 June and 1 October 1943, but because of relapses experienced admission rates in the thousands per 1,000 men per year. During this period the heavily infected Americal Division was not on suppressive atabrine, and immediately after atabrine suppression was attempted during November 1943, there occurred a dramatic improvement which has not been offset by the Bougainville campaign.

Malaria remains a dread enemy, and important operations are in prospect for highly malarious areas. Under combat conditions it will be impossible to prevent infection entirely, but it is now clear that adequate anti-mosquito control and effective atabrine and malaria discipline will prevent the experience of 1942 and 1943 when entire divisions in the Pacific were knocked out of the fight because of malaria. Once malaria is acquired, atabrine will control the clinical manifestations of the disease to a degree which will permit infected troops to remain effective. The achievement of truly effective atabrine discipline is not easy and requires rigorous observance of precautions to insure that troops actually take atabrine as directed. Realization of good atabrine discipline will go far to conserve effective fighting strength in malarious areas.

MALARIA, ADMISSIONS PER THOUSAND MEN PER YEAR
COMBAT DIVISIONS, SOUTH PACIFIC



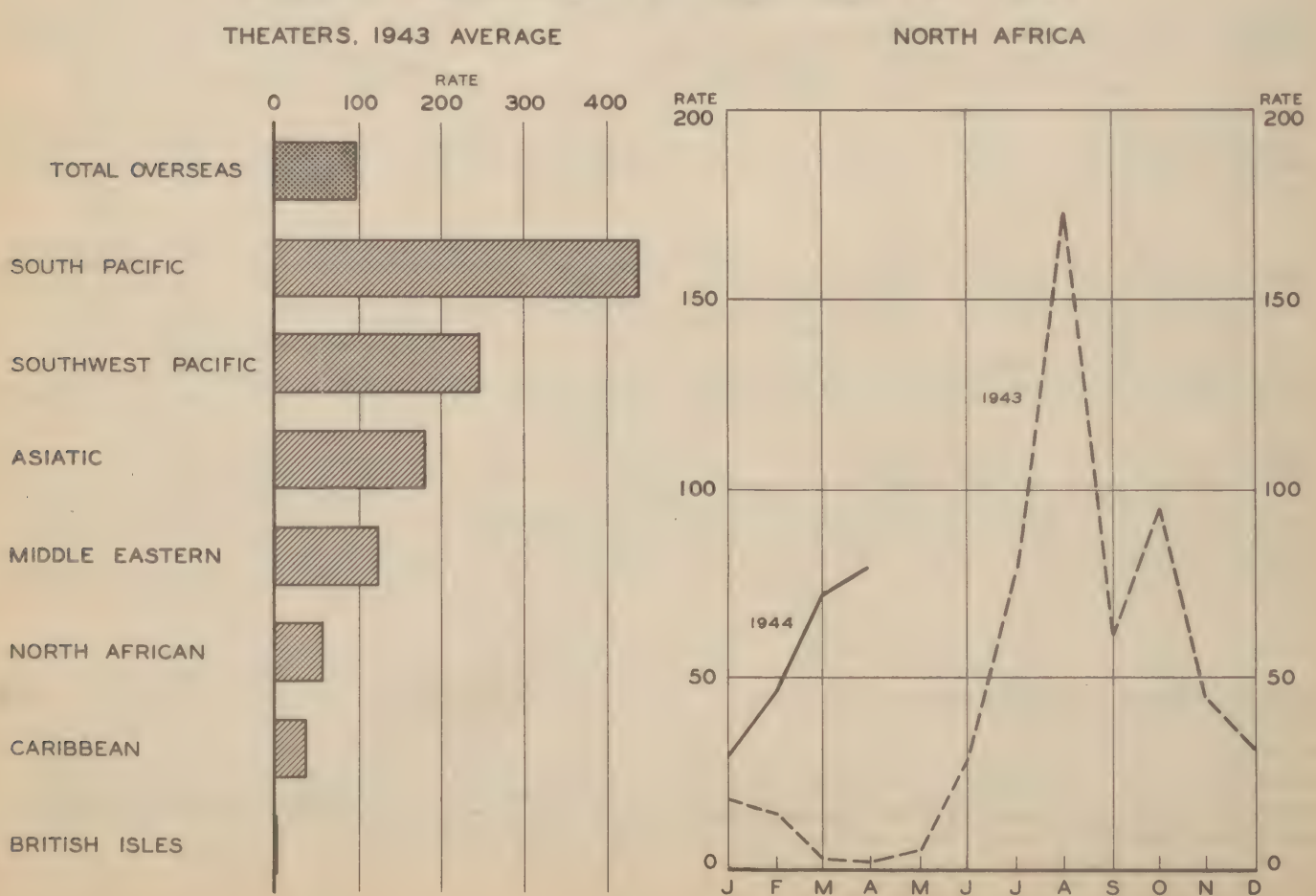
MALARIA IN THE NORTH AFRICAN THEATER

Although great headway has been made against malaria, especially in the South and Southwest Pacific, the disease continues to constitute an ever-present threat in the Pacific, in Asia, and in North Africa as well. The average 1943 experience of the various theaters is shown in the left-hand panel below. The coast of North Africa consists entirely of areas of moderate to high endemicity; Sicily, Sardinia, and Corsica are highly endemic areas; and most of the Italian peninsula is moderately endemic. The region around Rome is notorious as a malarious section and the devastation of war has increased the problem. The unfavorable 1943 experience of the theater should be a sufficient reminder of the importance of malaria in North Africa, even if allowance be made for possible erroneous inclusion of many cases of sandfly fever, but the most recent information from the theater presents additional reasons for concern.

During the first three months of 1944 the malaria admission rate rose rapidly to reach 72 per thousand men per year in March, about the level of the rate for July 1943. For the Fifth Army the March rate was 89 admissions per 1,000 men per year. The right-hand panel of the accompanying chart gives the rates for 1943 and 1944. The rapid upswing does not reflect increased transmission but rather relapses and the clinical appearance of previously suppressed malaria. However, the concentration of forces in highly malarious areas, and the likelihood of a favorable season for the breeding of mosquitoes, forecast a very serious malaria problem in this theater during the summer and early fall of 1944. It has been estimated that U. S. Army forces lost at least several hundred thousand man-days because of malaria during 1943.

In December schools were instituted to promote malaria control and discipline and these have been widely conducted throughout the theater. In March seven additional malaria control units were requisitioned to supervise a thoroughgoing anti-mosquito program, and by 5 June these and additional units had been authorized for constitution and activation from theater personnel. It is anticipated that adequate supplies will be available for control work, and it is expected that extensive use will be made of DDT for larviciding and residual spray killing of adult mosquitoes in combat areas. Extensive airplane dusting is planned for Italy.

MALARIA, ADMISSIONS PER 1,000 MEN PER YEAR



PRESENT STATUS OF ANTI-MALARIAL DRUGS

Although atabrine was synthesized in 1933 and came into extensive use before the outbreak of the war, until recently its anti-malarial properties were generally regarded as inferior to those of quinine to which it is structurally unrelated. The exigencies of the situation imposed in 1942 by the Japanese occupation of the Dutch East Indies, primary source of the cinchona bark from which quinine is derived, compelled reliance upon atabrine to a degree which appeared unfortunate to many. However, the experience of the past two years has demonstrated that atabrine is the more useful anti-malarial drug, and it is doubtful if this important lesson could have been so readily learned had the supply of quinine been adequate for the support of military operations. The recent synthesis of quinine offered no considerable advantages to the Army, and the supply program will continue to stress atabrine.

Prior to the development of atabrine, there was evolved in Germany a synthetic drug known as plasmochin. Given alone, plasmochin was found to be useless in malaria, but in association with quinine or atabrine it was believed to possess significant therapeutic value. The Army at first extensively tried plasmochin, but the severe untoward effects of its use and its apparent failure to prevent relapses resulted in its abandonment in all but exceptional circumstances. Atabrine, on the other hand, after a period of doubt concerning its possible value and dangers, has come to be regarded, not only as the best suppressant of clinical symptoms of malaria during the period following upon initial infection, but also as the best general therapeutic agent, regardless of the availability of quinine. The careful clinical experimentation which has been conducted in both the South and the Southwest Pacific theaters shows clearly that atabrine, used prior to infection and therapeutically, prevents the development or recurrence of falciparum malaria, its action being possibly definitive. The low mortality associated with World War II malaria may well stem from this fact. Moreover, against vivax malaria, which is more prone to repeated relapse, recent rigorous experiments have shown that atabrine effectively suppresses the clinical symptoms of the disease in a large majority of cases, permitting heavily infected units to continue in combat, or at a later stage to be rehabilitated and returned to combat duty. It has also been found that atabrine, properly used, is rarely associated with troublesome symptoms.

Quinine remains necessary for the relatively few instances in which malaria must be treated by intravenous injection or in which individuals are highly sensitive to atabrine. Efforts have recently been made by the Army to determine the relative usefulness of another agent, totaquine, in the treatment of malaria. This preparation is actually a mixture of cinchona alkaloids, including a small proportion of quinine, obtained from cinchona bark without complete separation and isolation of the individual alkaloids. Totaquine has been standardized in the United States Pharmacopoeia. Large quantities of cinchona bark, with a relatively low quinine content, are available in Central and South America and could compensate for the unavailability of quinine from the Dutch East Indies. The importance of anti-malarial drugs in the Army supply program is indicated by the fact that the 1944 requirements are valued at about 3 percent of the whole medical supply program.

The previously anticipated need for a substitute for quinine, the availability of totaquine, and the possible importance of the drug for mass anti-malarial work among civilian populations, encouraged Army trials in Panama, the South Pacific, and in the U. S. These independent experiments uniformly show that totaquine is comparable with quinine as a therapeutic agent, except that it is slightly more toxic, and that both drugs are inferior to atabrine. The three drugs differ little in their effect upon fever and other symptoms. Comparatively few patients manifest unpleasant symptoms under atabrine therapy, whereas a large majority experience such symptoms when treated with quinine or with totaquine, the most severe symptoms being the nausea and vomiting accompanying totaquine therapy. The other drugs are comparable in their ability to rid the blood stream of malarial parasites, and totaquine is similar to quinine with respect to the frequency of subsequent relapses, and average days between attacks, among patients receiving such therapy. Atabrine, however, is definitely superior to both in that the interval between attacks is much longer following its use.

No drug is known which actually prevents malarial infection or which can be relied upon to prevent relapses of vivax malaria. Apparently a drug of a new type is needed for these purposes. However, atabrine is the best drug available both for suppressing clinical attacks and for controlling them once they occur. All the available evidence points to the likelihood that its potential military usefulness has not yet been fully exploited and that a significant part of the noneffectiveness observed in the Pacific in 1942 and 1943 could have been prevented by a more rigorous use of the drug by all personnel, that is, by what has come to be called effective "atabrine discipline". Fundamentally, however, the best protection against malaria is the prevention of infection by means of mosquito control and malaria discipline, and on this score also the Army has made, and continues to make, great progress.

NEUROPSYCHIATRIC PROBLEM IN BOUGAINVILLE CAMPAIGN

The following information is extracted from a recent technical medical report from the South Pacific:

"Among the many factors in the problem of psychoneurotic breakdowns within a combat unit, three should be mentioned as pertinent. The most important factor, of course, is the unit morale. Where morale is high, there is a definite conscious effort on the part of the patient to recover, to return to his unit, and to carry on with his job. In units where morale is poor, the opposite is the case, the desire being to escape and the secondary gain obtained by the illness is so great that it overbalances the scale in the direction of the symptoms.

"The second factor is the attitude of line officers, non-commissioned officers, and soldier-associates toward the psychoneurotic problem. Organizations which have fostered a 'hard boiled' attitude towards psychoneurotic breakdowns have a higher incidence of these cases. The soldier, as tension and pressure develops, is unable to relax, becomes more tense and fails to report his feelings to his associates, and effective prophylactic measures then cannot be taken. Furthermore, when the symptoms develop, the soldier is averse to returning to his organization, fearing ridicule and loss of prestige among his soldier associates. A full understanding of the problem by line officers and non-commissioned officers is of paramount importance. A sympathetic attitude towards the soldier returning to duty must also be present. This will abet the patient's willingness and desire to return to his organization as it allows his resumption of duty without 'loss of face'.

"The third factor essential to such a program, as well as to an effective therapeutic plan, is a workable system of reclassification and reassignment within the unit. Frequently, this is difficult to get across to line officers, since, necessarily, this means a constant shifting of personnel; however, to salvage these cases within their own organization such a program is essential. Naturally, all line officers are anxious to have men of the highest physical and mental levels under their command, and they are sometimes reluctant to cooperate in reassigning these patients as they return to duty, and would prefer to 'get rid of them'.

"In the 37th Division the morale has been high. Line officers and non-commissioned officers understand the psychoneurotic problem, and have uniformly cooperated in reclassification and reassignment problems, exhibiting a desire to salvage men within their organization. The unit commander and the unit surgeon of only one unit in the Division were opposed to the return of psychiatric patients to duty, stating that they were of little value.

"The 37th Division has been participating in the Bougainville operation since D-day. The initial invasion and establishment of a beach-head was met by only moderate enemy resistance. However, during the last 20 days of March, Division forces have participated in intensive combat, of a primarily defensive nature.

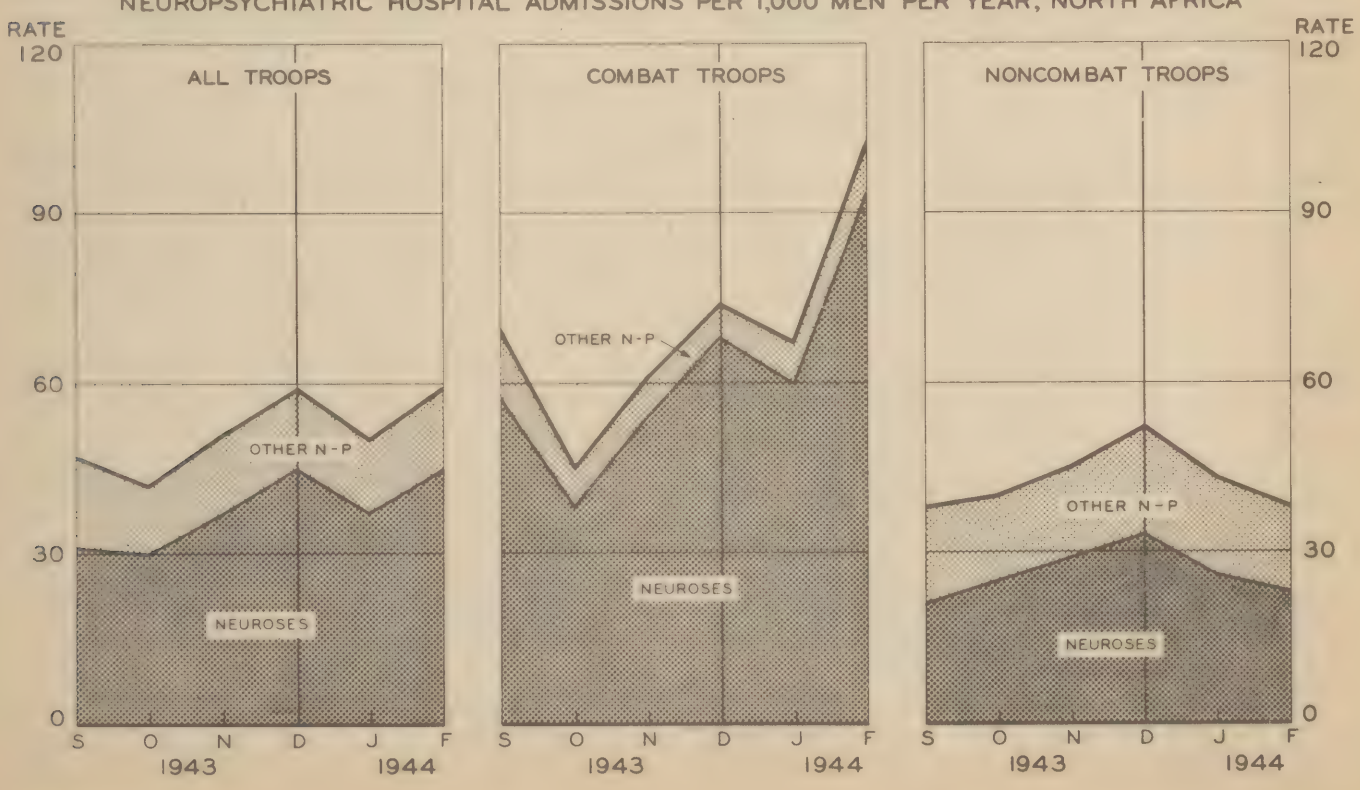
"For the 5 month period from 1 November 1943 to 1 April 1944, this Division had a total of 247 neuropsychiatric patients treated in the Division Clearing station. Of this number, 87 (35%) were acute combat reactions, exhibiting the classical picture of tenseness, anxiety, tremor, startled reaction, psychosomatic conversion, and amnesia of varying degree. The remaining 160 of this group were psychotics, chronic psychoneurotics whose life histories indicated longstanding neurotic difficulties, convulsive disorders, alcoholism, constitutional psychopathic states, and neurological disorders.

"Of the combat reaction group, 80, or 92 percent, were returned to duty, some directly to combat units, and others to duty with Division service troops. Of the other group of 160 patients, 60, or 38 percent, were evacuated from the island. For the most part, these patients in the latter group will probably be returned to the United States. The other 100, or 62 percent were returned to some form of duty. Consultations with regimental surgeons in the Division, with one exception as noted in a preceding paragraph, showed that patients returned to duty were effective, and were doing a good job within the unit."

NEUROPSYCHIATRIC ADMISSIONS IN THE NORTH AFRICAN THEATER

Information on the incidence of neuropsychiatric disorders among troops in overseas theaters has been exceptionally fragmentary, the best observations pertaining to individual combat units for short periods of time. Special interest, therefore, attaches to the results of a tabulation made in North Africa on the hospital admissions during the six months ending with February 1944. The data are shown graphically below with a distinction between the neuroses and all other neuropsychiatric diagnoses, and another between combat and noncombat troops. The neuroses plainly constitute the dynamic element in the rates. Neurological admissions are about as frequent among combat as among noncombat troops, but as a group the psychiatric diagnoses other than the neuroses, i.e. the psychoses and psychoneuroses, are more common among noncombat personnel in this theater. This fact is considered to reflect at least in part the selection of men for combat duty. In addition to the admissions represented by these rates there are many cases with psychosomatic difficulties escaping neuropsychiatric classification. Informal observations and interviews repeatedly suggest that men in infantry units in North Africa feel that they have been kept in combat over periods too long in duration and without provision for sufficient rest. One limited study of some of the factors governing morale includes the following preliminary but significant comment: "All (the men interviewed) have the following in common: 1. They are considered to be good soldiers by their immediate superiors. 2. They have responsible duties. 3. Their assignment is in or with Infantry combat elements. 4. They have not tried to avoid or evade responsibility or duty assigned them. Interviews were sandwiched in between trips forward and at times were conducted under shell fire. ... Although the study is not yet completed, certain generalizations may be stated: 1. Remote symbols such as 'The Democratic Way of Life or The Four Freedoms' have remarkably little potency in keeping a man on the line. 2. Self respect and determination are the most important factors. 3. Religion plays an accessory but not a determinative role. 4. The pressure of discipline and a sense of immediate duty play the second most important role. 5. The majority of the men were what is known in G.I. parlance as 'browned off' .. They were disgusted, disillusioned, felt that their unit was the work-horse of the division and the division the work-horse of the Army. ... As may be imagined, the interview provided the soldier or officer with an unrivalled opportunity for sounding off. Consequently a large percentage of the dissatisfaction may be attributed to run-of-the-mill, normal, 'beefing'. However, the majority of those interviewed (over 75 percent) expressed these opinions with distressing regularity. It becomes obvious on casual examination of the case histories that distant values play little or no role in keeping these men from breakdown. Re-education of these men is impracticable because of the inherent difficulties. The only other solution is the substitution of short-term goals such as the rest camp, frequent rest periods, an altered form of rotation policy."

NEUROPSYCHIATRIC HOSPITAL ADMISSIONS PER 1,000 MEN PER YEAR, NORTH AFRICA



DISEASE AND INJURY

DIARRHEA AND DYSENTERY

Control of the incidence of diarrheal disease depends upon the environmental hazards, the combat situation, the adequacy of certain supplies, and the sanitary discipline of the troops themselves. The strategic deployment of U. S. troops in tropical and sub-tropical areas, where the climate and other factors encourage the breeding of flies and the multiplication of causative organisms, has already resulted in an admission rate well above that recorded for World War I, despite the advances which have been made in training, in the practice of sanitation, and in providing such special equipment as screening.

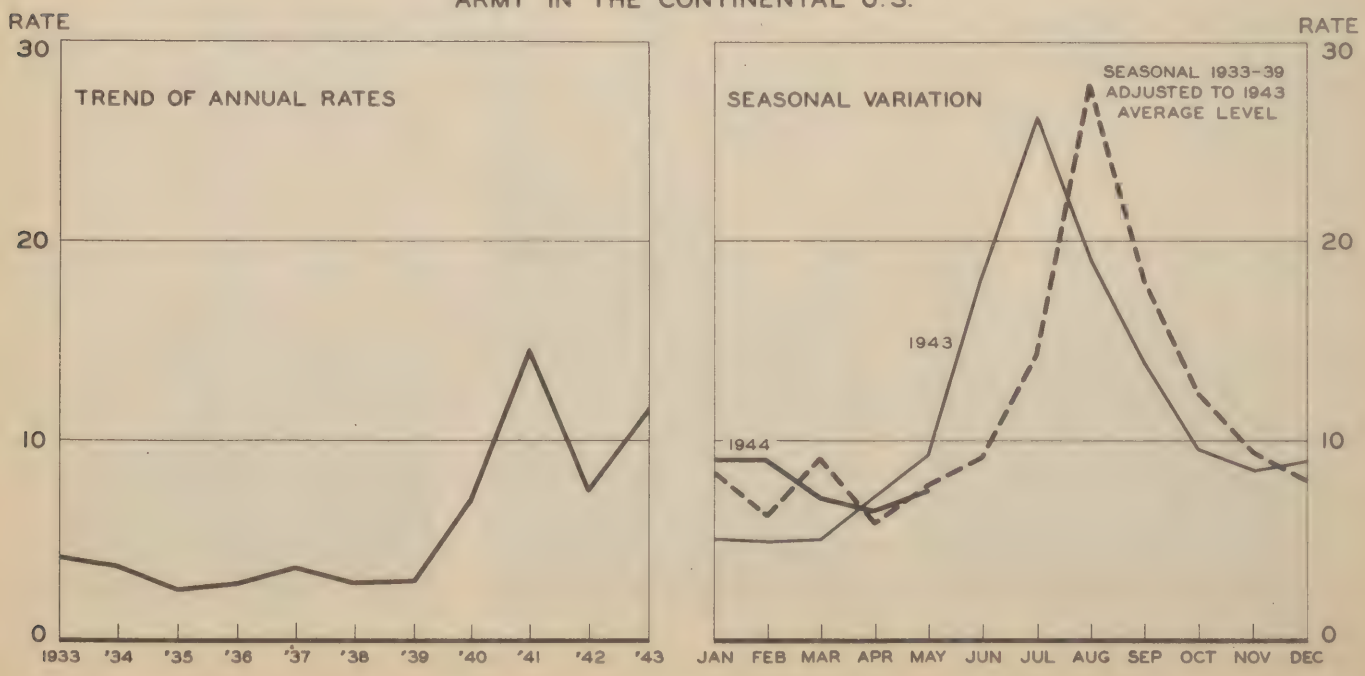
During 1943, largely in consequence of extensive maneuvers, the average rate in the U. S. was about 12 per 1,000 men per year. As the strength of the maneuver areas tapered off, however, the admission rate remained fairly high and continued so into 1944. The left-hand chart below gives the trend of the average annual rates and the other chart presents comparable rates on a monthly basis. In addition to the 1943-1944 rates there is shown an average seasonal trend for 1933-1939 adjusted to the considerably higher 1943 mean level. The high rates for January and February 1944 were followed by somewhat lower rates in March and April, but a beginning of the seasonal upswing is evident for May. The precise course of the admission rate cannot be known in advance, but a contour roughly analogous to those shown for 1943 and 1933-1939 may be anticipated unless exceptionally successful control measures are undertaken. The fact that extensive maneuvers are not planned for 1944 should exercise a restraining influence upon the seasonal upswing.

When it is recalled that even within the Continental U. S. large bodies of troops on maneuvers have experienced admission rates of 100 to 300 per 1,000 men per year for many weeks in succession, it is readily appreciated that the military importance of rigid sanitary control cannot be over-estimated. The initial occupation of certain base areas, notably those in the South Pacific, has been attended with exceedingly high admission rates. During the summer of 1943 the admission rate in North Africa reached the high point of 445 per 1,000 men per year, or about 4 percent per month. It is true that the average patient loses only about 6 days when admitted for diarrheal disease overseas, but rapid and extensive losses of effective manpower are invited by failure to maintain rigid sanitary discipline, even under combat conditions. A single unit does not ordinarily have more than one outbreak of diarrheal disease, for adequate corrective measures are usually adopted promptly thereafter. Any outbreak, however, should serve as a signal to higher authority to check the status of sanitary control in all elements of the command and to institute therein such measures as have been found effective in the particular local situation.

The 1943 experience of the various theaters, together with the available information for 1944, is shown in the set of panels on the following page. In three theaters the rate exceeded 100 per 1,000 men per year, and the average for all forces overseas was above 80 from June through September. The degree of sanitary control attainable in active combat

DIARRHEA AND DYSENTERY, ADMISSIONS PER THOUSAND MEN PER YEAR

ARMY IN THE CONTINENTAL U.S.

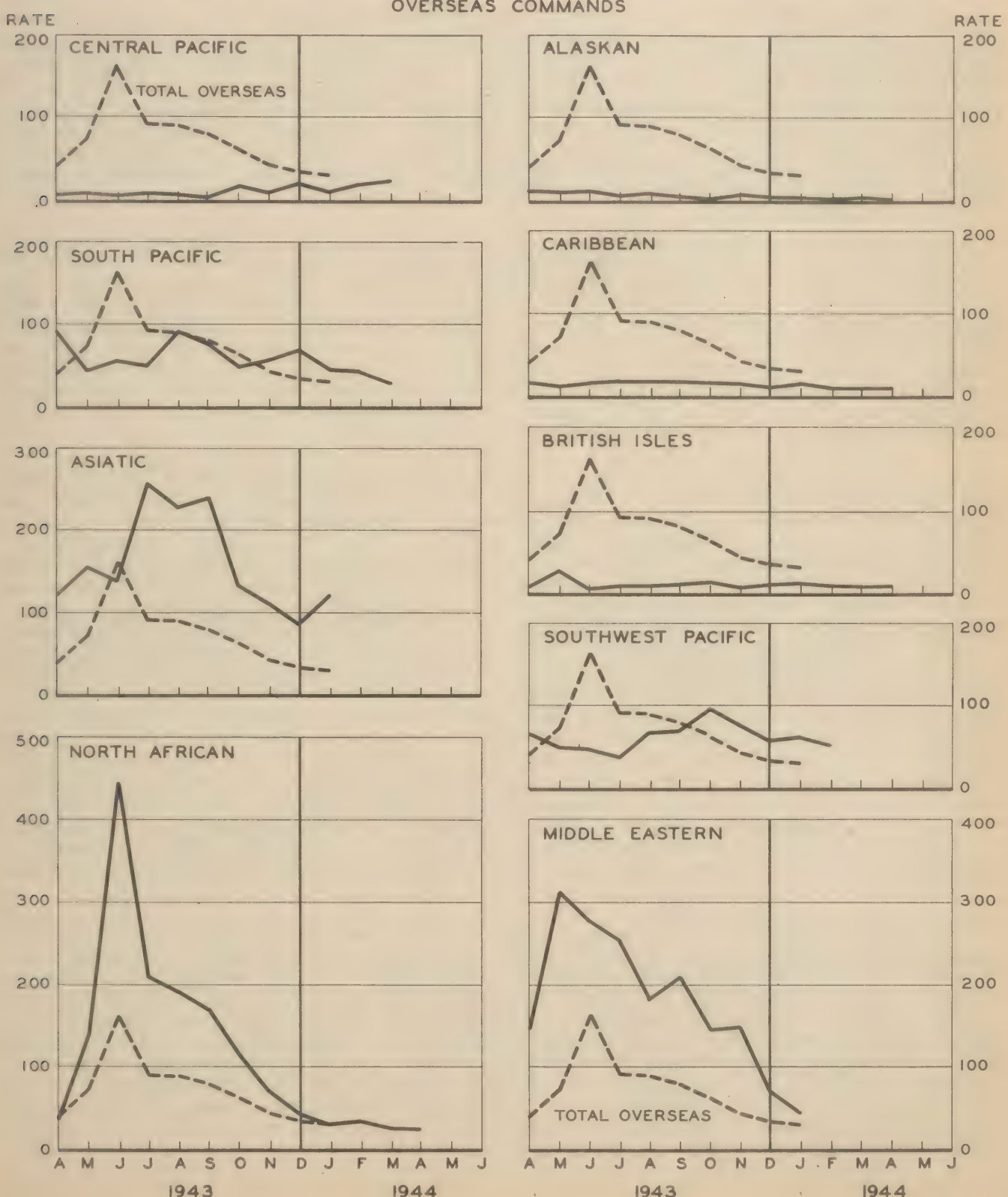


DIARRHEA AND DYSENTERY (Continued)

theaters is an open question, but knowledge of the difficulties should not bar the attempt. If the summer of 1944 follows the pattern of 1943, roughly a million man-days will be lost overseas during the seven months starting 1 June 1944. A target of this size seems a worthy objective. More careful selection and supervision of mess personnel, insistence upon individual sanitary discipline of the highest order, screening against flies where possible, and effective sanitary control of camp sites are the measures which must be stressed if effective reduction is to be made in the huge total of noneffectiveness otherwise in prospect.

DIARRHEA AND DYSENTERY, ADMISSIONS PER THOUSAND MEN PER YEAR

OVERSEAS COMMANDS



GAS GANGRENE

Gas gangrene, or gas bacillus infection, is perhaps the most important of all wound infections. During the last war about 2,700 cases were recorded among 153,500 U. S. admissions for gunshot wounds, an incidence of 1.8 percent. Although a frequency of this order may seem small the very high morbidity and mortality rates associated with gas gangrene give it real significance. There were almost 1,300 deaths among the 2,700 recorded cases, a case fatality rate of 47 percent. The morbidity involved in gas gangrene is highly significant, and particularly so in regard to amputation of the lower extremities. Finally, gas gangrene is one of the comparatively few barriers to the attainment of that ideal state of surgical care to which the Medical Department strives and the prospect of which so admirably ministers to the maintenance of high morale among combat troops.

The infection is caused by any one of a small group of bacilli which thrive especially well without oxygen and in dead muscle tissue and which are presumed to be omnipresent in highly fertilized soil such as that of the European continent. Contamination of wounds, especially frequent among those caused by high explosives, is thus a predisposing factor of importance. The presence of large amounts of devitalized muscle tissue provides a medium for the growth and rapid spread of the infection. A deficiency in the blood supply to the wounded area, whether attributable to local injury or to depression of circulating blood volume consequent to shock or hemorrhage, also promotes the further development of the infection. It follows that delay in evacuation and in primary surgical care augments the risk of this serious complication.

It is unfortunately true that no precise picture of the World War II incidence can be drawn, even after 70,000 or more battle injuries have been sustained. However, the fragmentary incidence points to the likelihood that the current experience is only slightly more favorable than that of World War I. The only available observations of consequence have been made on the Italian front, and provide an estimated incidence of about 1 percent among men wounded in battle. With respect to fatality, however, there is as yet no evidence of any considerable reduction in the fatality attending the infection. The reported Italian experience suggests a fatality of about 45 percent in comparison with 47 percent in World War II. A British estimate is of the same general order of magnitude.

The importance of terrain and climate is well illustrated by the British Eighth Army experience in North Africa, in Sicily, and in Italy. Under desert conditions there was comparatively little gas gangrene, but it became increasingly more prevalent as British troops moved in the direction of the Italian mainland, where the incidence is believed comparable to that estimated for U. S. troops in Italy. Although it is impossible to control the initial contamination of wounds, prompt prophylactic and therapeutic treatment can be fairly effective in decreasing subsequent morbidity and mortality from gas gangrene. Properly executed, prompt initial surgery is by all odds the most effective prophylactic measure. Delay in evacuation and in the institution of surgery, or the performance of inadequate surgery, has been observed to foster the development of the infection in wounds received in Italy, as in the last war. Although efforts have been made to produce an agent capable of immunizing against the infection, this development has not yet reached the final stage of practical application. Sulfa drugs have not proved effective in either the prevention or the treatment of the condition and the anti-toxin used for treatment has not been found especially valuable. Penicillin, however, offers real promise not only in the treatment of the infection but also in its prevention. Experimentally it has proved the most valuable agent yet developed for this purpose and the limited clinical experience is especially encouraging. The availability of ample quantities of whole blood and of blood plasma should also assist in preventing the failure of the blood supply to wounded areas and thus lower the morbidity from gas gangrene.

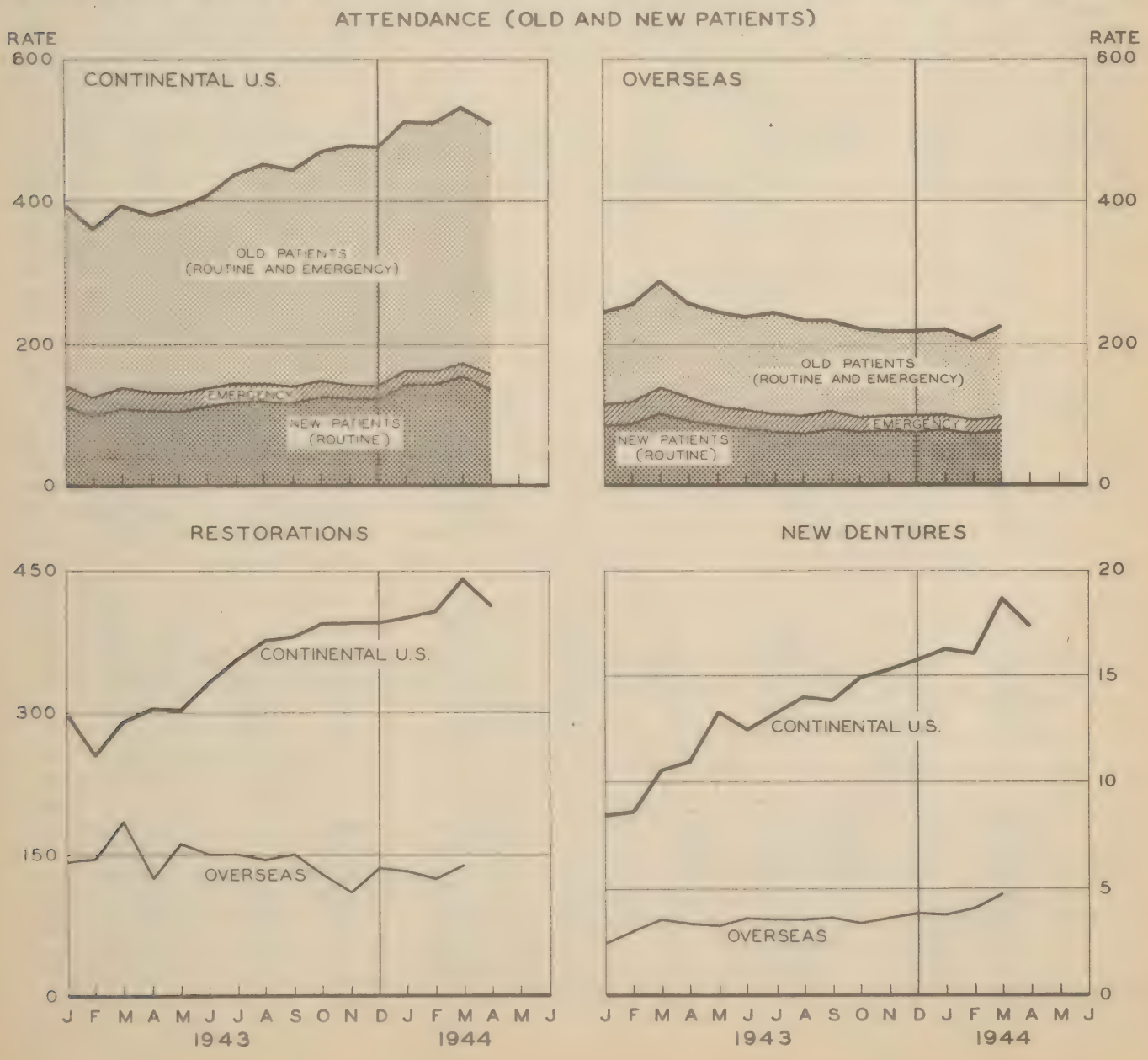
The management of gas gangrene is one index of surgical accomplishment and of the success of other measures for the early care of the wounded. As surgeons become more experienced in the prevention and treatment of the infection, it may be anticipated that the dangers of gas gangrene will diminish. The entire problem is receiving the assiduous attention of several groups of investigators, both British and American, and these field observations have already yielded much valuable information. Intensive studies are being made on the prophylactic value of penicillin in combat areas, and it is possible that wide use of this new drug may further improve the outlook with respect to gas bacillus infection. It remains, however, an omnipresent threat to the success of front-line surgery and its complete conquest will be slow and difficult. Large scale operations in Europe and in the Asiatic Theater may be expected to pose the problem in full force.

DENTAL ADMISSIONS AND TREATMENTS

In the Continental U. S. dental attendance (including old and new patients) has increased from 400 per 1,000 men per month in January 1943 to a peak of 532 in March 1944. The marked rise in attendance is attributed to the increased availability of supplies, equipment, dental officers and technicians. The charts below indicate that the overseas dental attendance has generally been about one-half the attendance in the Continental U. S. Since all essential dental service is completed prior to assignments in foreign theaters, it is appropriate that dental attendance overseas should be proportionally lower than that in the U. S. In addition, there are fewer dental officers overseas per thousand troop strength and facilities for dental service and supplies are not as adequate as in the U. S. The rate for emergency admissions (new patients), has remained about the same during the past 15 months, both in Continental U. S. and overseas.

The number of restorations (fillings) and new dentures per 1,000 men in the Continental United States has increased very markedly since January 1942, when the rate was only 164 for restorations and 2 for dentures. The rate rose to 297 in January 1943, 393 in December 1943, and to an all-time high of 439 in March 1944. Except for March 1943, when the overseas restoration rate reached a peak of 184 per 1,000 men per month, the rate of restorations overseas has remained fairly constant at about 140 per 1,000 men per month. The denture rate in the Continental U. S. was 8.4 per 1,000 men per month in January 1943, and 18.6 in March 1944, the highest rate thus far attained. The overseas denture rate was 2.4 per 1,000 men per month in January 1943, and by March 1944 it had been almost doubled.

DENTAL ATTENDANCE, ADMISSIONS, AND TREATMENT PER 1000 MEN PER MONTH



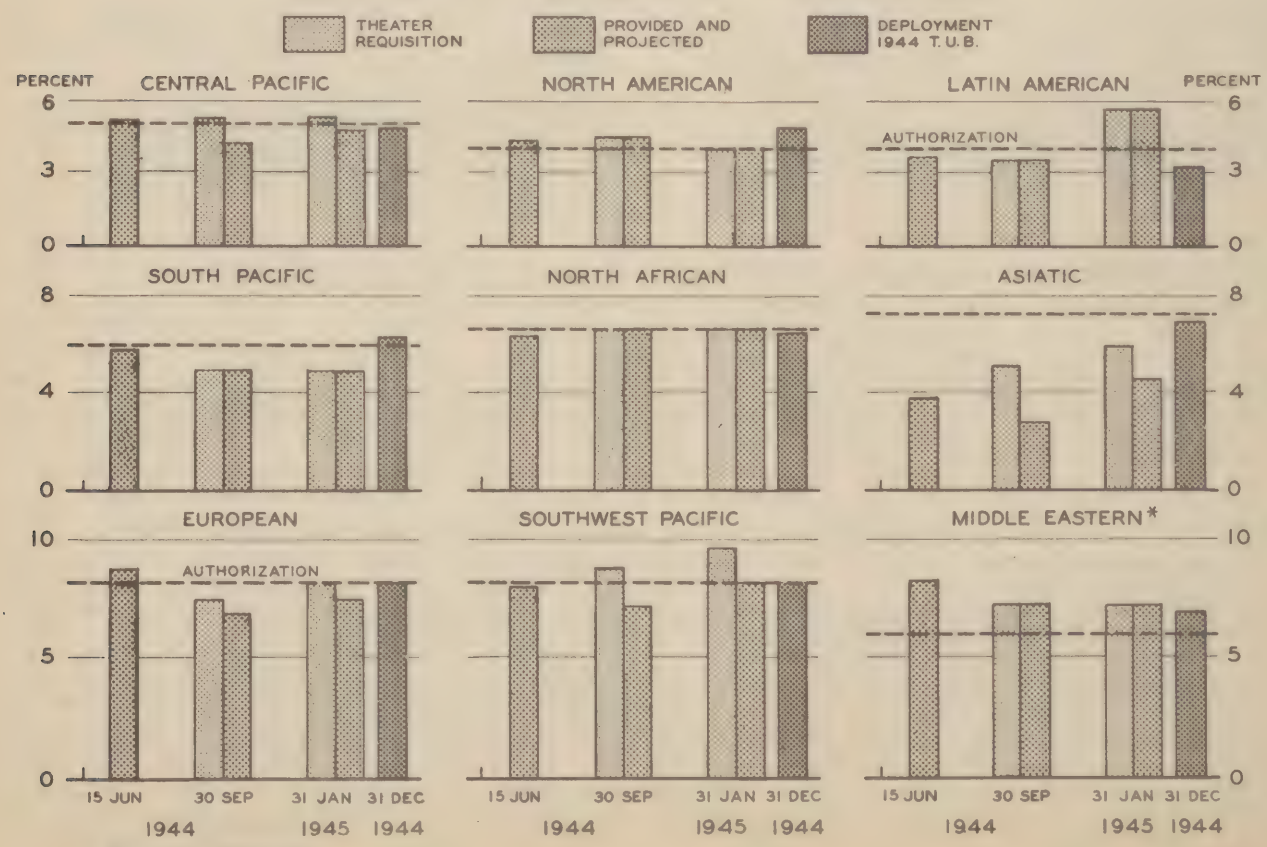
HOSPITALIZATION OVERSEAS

During May, 11 general and 3 field hospitals were preactivated with newly authorized personnel, bringing the total of 154 general and 70 field hospitals activated or preactivated by the end of May. Even more important, it was possible to plan the preactivation of 47 general and 16 field hospitals during June in order to make up some of the deficit between the number of units activated to date and the 246 numbered general and 97 field hospitals in the 1944 War Department troop unit basis. Although the new units mentioned above are, or are soon to be, in preactivation training, in many instances their activation and completion of unit training cannot be accomplished in time to permit their arrival overseas on the dates set by the theaters. The situation with respect to station hospitals is more favorable, a sufficient number having already been shipped to meet the current needs.

The overall allotment of personnel for the Medical Department, as tentatively planned by Military Personnel, A.S.F., in accordance with A.S.F. Circular No. 26, apparently will not completely materialize because of the change in deadline from 30 June to 31 October. This will prevent the preactivation of 26 general hospitals and 8 field hospitals as previously planned in order to meet the requirements of the 16th Revision of W.D. Six Months Troop Forecast (August - January inclusive). Present information indicates that there will continue to be shortages of fixed hospital units for overseas theaters, but that these will be much less serious than those in prospect a month ago (see HEALTH for April). The Latin American Theater has been directed by the War Department to reduce its fixed hospitalization to the authorized level commensurate with its reduced strength. The needs of the various theaters are shown graphically below in relation to the projected availability of fixed hospital units according to the 16th Revision of the W.D. Six Months Troop Forecast. Except for 31 January, all data are shown as percentages of the projected strengths for the particular dates. The projected strengths for 31 December were used for the 31 January percentages. The dotted horizontal line shows the latest War Department authorization for fixed hospital units in each theater. A second measure of need, shown as the first or lightly hatched bar in each set, represents the number of beds (as a percentage of strength) requisitioned by the theater for 15 June, 30 September, and 31 January, according to the 16th Revision of the W.D. Six Months Troop Forecast. A final measure of need is the Operations, G/S deployment figure for the end of the year, shown as the darkest bar to the right of the space for each theater. The projected provision for each date appears as the second vertical bar in the set for that date.

PROJECTED AVAILABILITY OF FIXED HOSPITAL UNITS OVERSEAS

BEDS AS PERCENT OF STRENGTH



* And Persian Gulf Command.

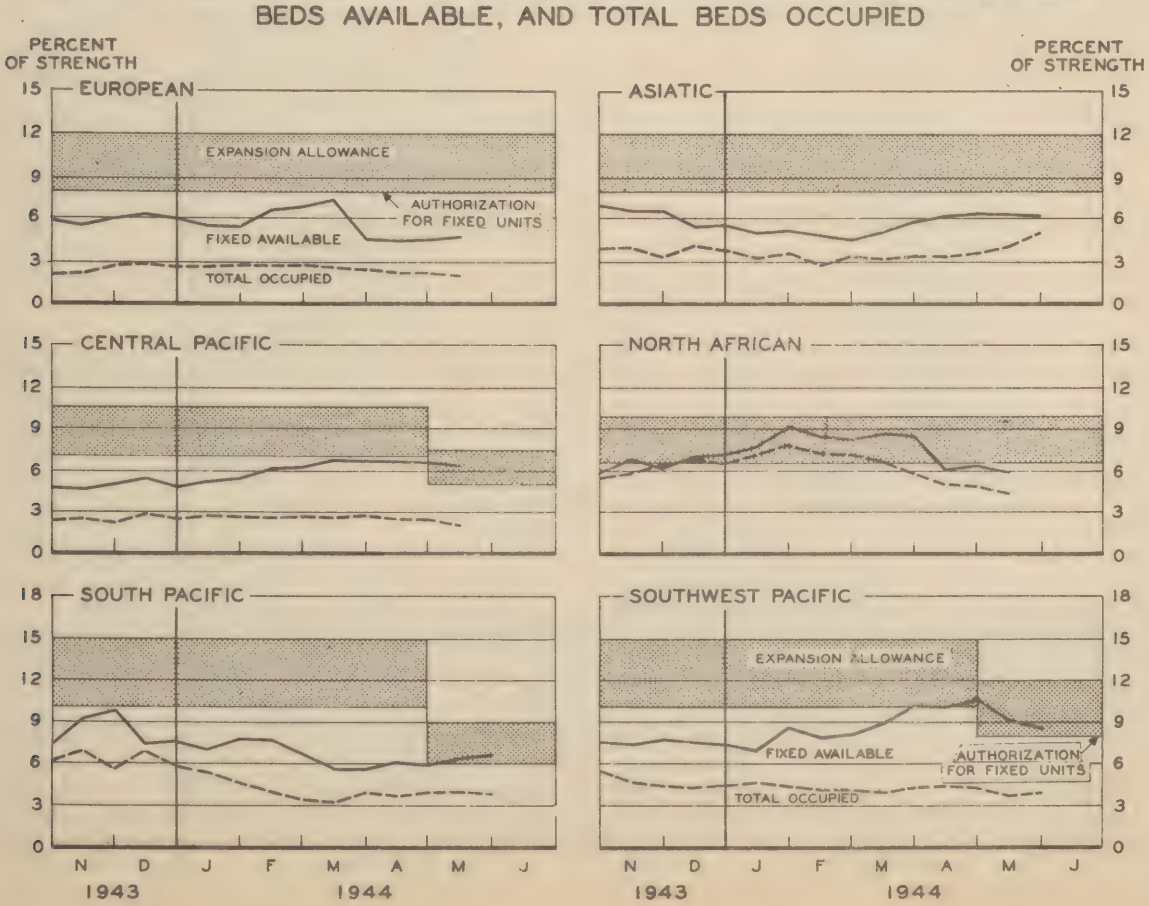
HOSPITALIZATION OVERSEAS (Continued)

In comparison with the five percent of U. S. strength currently provided in the U. S. for station plus general hospitals, some overseas theaters require 10 percent or more in beds in fixed hospital units (station, general, and field hospitals). The question of theater hospitalization needs is subject to continued study. Estimates of their requirements must take into consideration not only tactical activity, present and planned, but also the probable incidence of disease and nonbattle injury, facilities for the evacuation of patients needing special treatments or extended periods of hospitalization, the evacuation policy itself, and the presence of prisoners of war and civilians requiring treatment. In the Asiatic Theater, provision is made for hospitalization in support of Chinese units in India which are excluded from the strength.

The reported trends in fixed beds are shown below for the six major theaters. The latest requirements for fixed bed units are those of the preceding page, except that the authorization shown for the Asiatic Theater is that for U. S. troops only. The 50 percent expansion allowance is shown as the hatched space above the authorization for units. However the expansion of bed capacity beyond the T/O capacity necessitates a more intensive utilization of personnel than that intended by the tables of organization except as an emergency measure. The solid line gives, as a percent of strength, the fixed beds (including expansion beds) reported as available by the theater in its weekly telegraphic report. The dotted line shows the total number of hospitalized patients in fixed and mobile hospitals, also as a percent of strength. The comparison between available fixed beds and total occupied beds is made in order to indicate what the fixed hospital load would be were all mobile facilities required to move in support of tactical operations. The points are provisional in that they are based upon telegraphic strengths, which are frequently only approximately correct. The decline in beds available in the Southwest Pacific reflects changes in strength.

Bed occupancy advanced sharply in the Asiatic Theater during the month, and presumably also in North Africa, although the latest point was not available when HEALTH went to press. On the eve of the European invasion ETO reported only about 5 percent of strength in available fixed beds, in sharp contrast to the need as revealed by the authorization and by other indices shown on the preceding page. However, the patients in hospital comprised only 2 percent of strength.

AUTHORIZATION FOR FIXED BEDS, EXPANSION ALLOWANCE, ALL FIXED BEDS AVAILABLE, AND TOTAL BEDS OCCUPIED



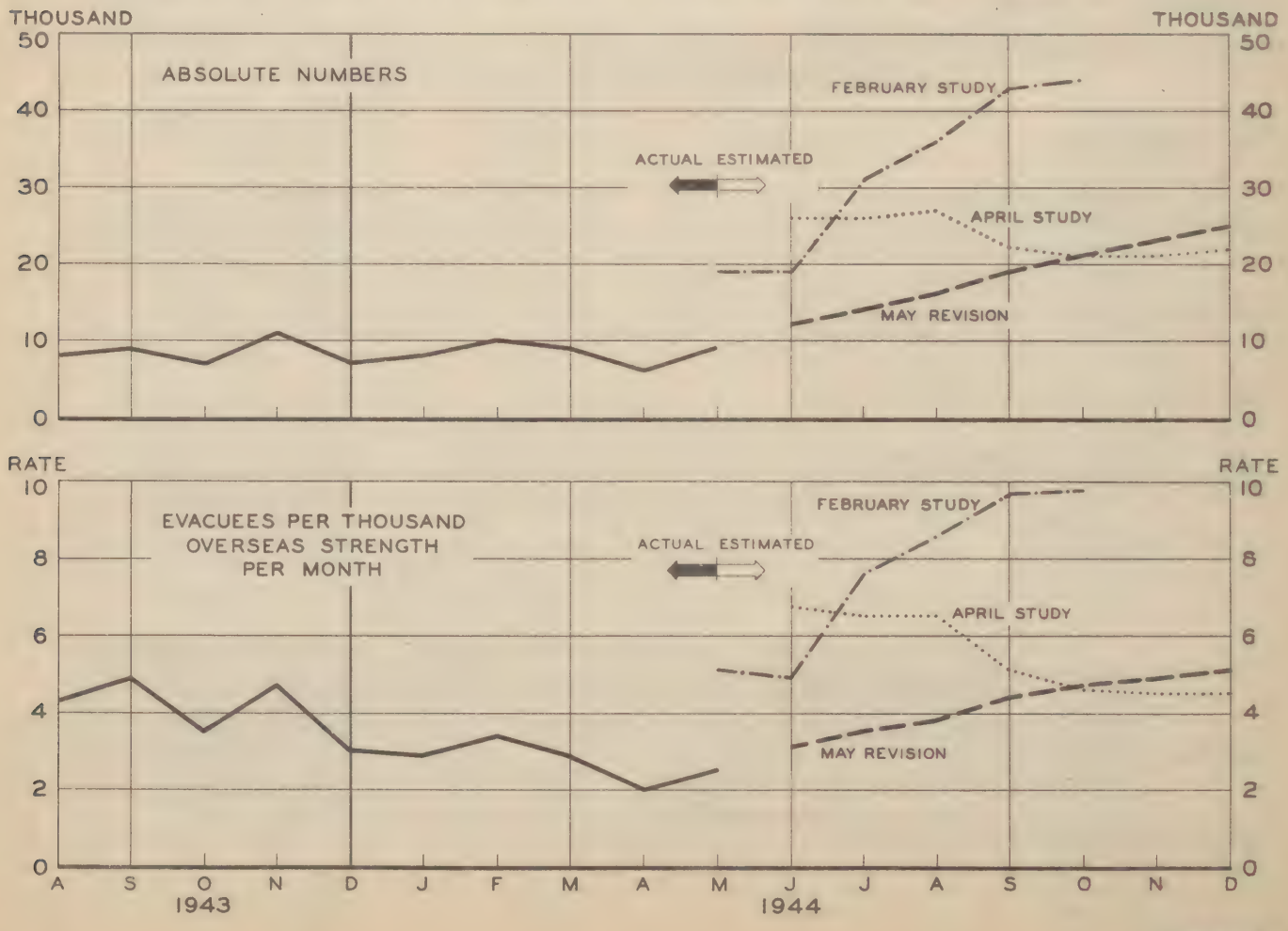
EVACUATION OF PATIENTS FROM OVERSEAS

During May it is estimated that about 9,300 overseas patients were debarked in the U. S., an evacuation rate of 2.5 per 1,000 overseas strength per month. This rate represents a reversal of the downward trend observed during March and April and is more in line with the various estimates which have been prepared for the balance of the year.

The problem of estimating the number of evacuees likely to arrive in the U. S. is rendered difficult by the unreliability attached to long-range casualty estimates. The accompanying chart provides three projections which have guided Medical Department planning in recent months. The highest set was prepared in February on the basis of certain assumptions as to casualty rates and average length of stay in hospital. Subsequently, Headquarters ETO, NATO, SWPA, and SPA were asked to provide a series of estimates, and these were evaluated and assembled for submission to the Chief of Staff in April and approved by the Deputy Chief of Staff on 25 April. Liberal allowances have been added for the other theaters to permit the drawing of the second line extending the series into the future. Two ETO estimates were provided, one based on an evacuation policy of 120 days and the other on a policy of 180 days, and the former was used in drawing the middle curve. In May, however, a revised estimate was obtained from ETO, and the lowest curve reflects this change; its other theater components are identical with those of the second curve. The present outlook for adequate hospitalization in ETO is much more favorable than it was a month ago, but the downward revision in estimated evacuees will prove misleading unless sufficient hospitalization can be made available in the theater. The estimates of evacuees were made in absolute terms and have been converted to monthly rates by the use of strengths derived by interpolating between the AGO 31 March overseas count and the W. D. Deployment figure for 31 December.

The three projections provide a range of estimates for the number of overseas patients likely to require hospitalization or convalescent care in the U. S. On the assumption of an average stay of 90 days, the peak load would be the maximum expected in any three consecutive months. In this sense the three curves yield peak loads of 123,000 patients, 80,000 patients, and 70,000 patients, a fairly wide range of estimates. In estimating the need for hospital beds an additional 25 percent is required for dispersion.

ACTUAL AND ANTICIPATED EVACUATION OF PATIENTS FROM OVERSEAS



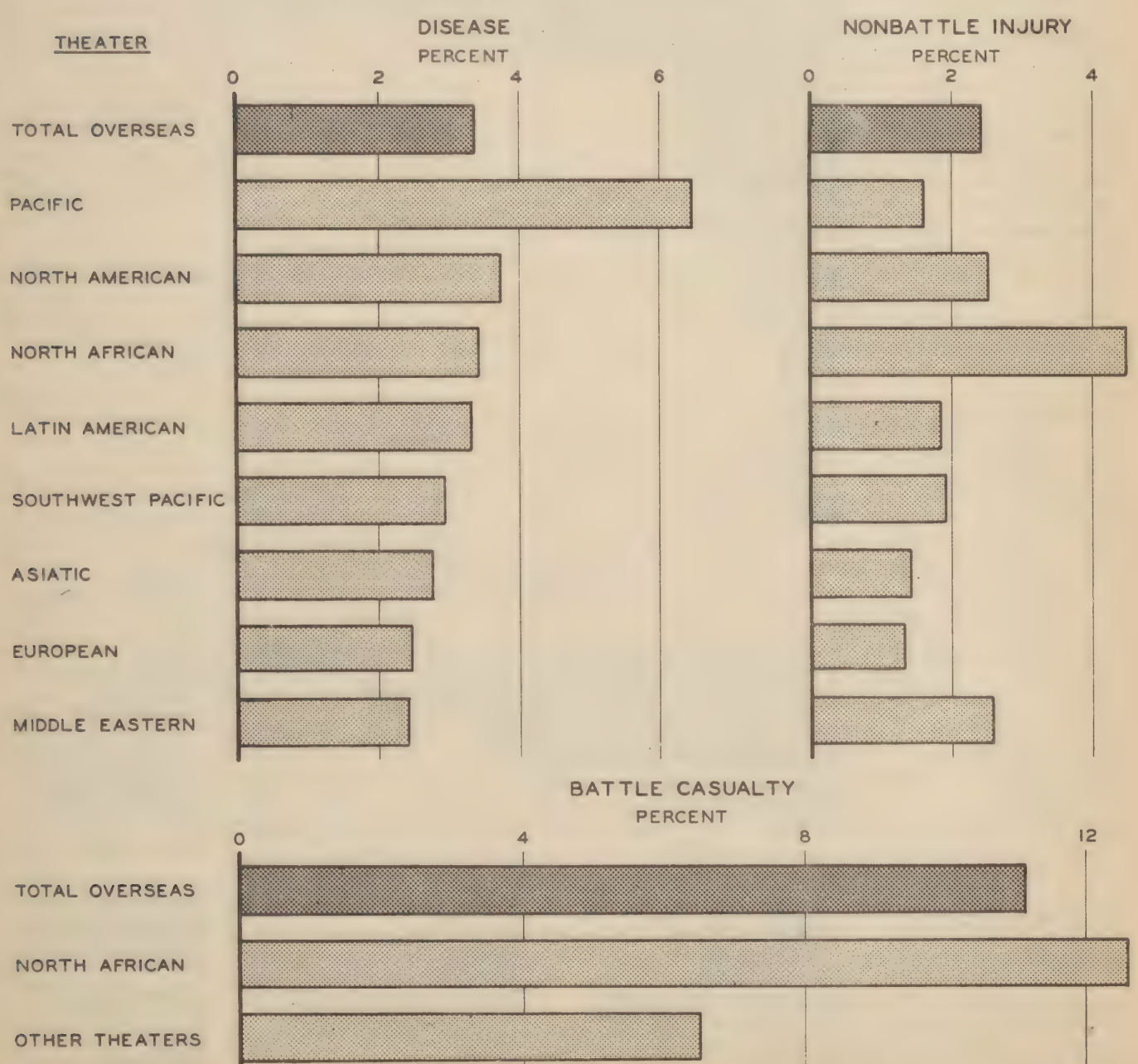
CAUSES OF EVACUATION FROM OVERSEAS

During January, February, and March approximately 26,000 evacuees were received in the U. S. from overseas. Disease accounted for about 80 percent, nonbattle injury for 8 percent, battle casualty for 11 percent, and "battle injury" for less than 1 percent. The term "battle injury" is used to denote traumatism sustained in the course of combat duty but not from enemy weapons.

In the accompanying charts the overseas theaters are arranged according to the percentage of admissions for disease during January, February, and March who were evacuated to the U. S. They show considerable variation about the average of 3.4 percent for disease admissions, 2.4 percent for nonbattle injury admissions, and 11.1 percent for battle casualties. The percentages are only approximate because there is no ready way of tracing the evacuees back to the precise set of admissions from which they were drawn, and because the medical records of perhaps 10 percent of the evacuees had not been received. Only North Africa is shown separately for battle casualty, in view of the small numbers of cases occurring elsewhere.

EVACUEES AS PERCENT OF ADMISSIONS

OVERSEAS THEATERS, JANUARY - MARCH 1944

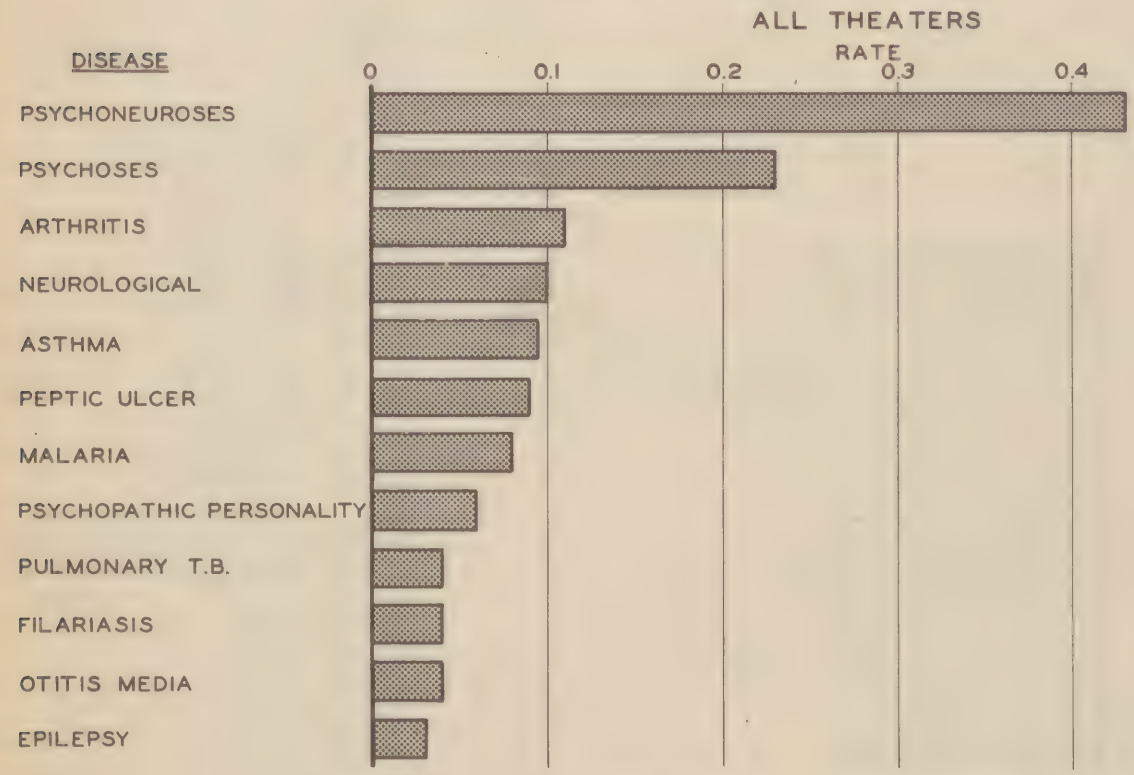


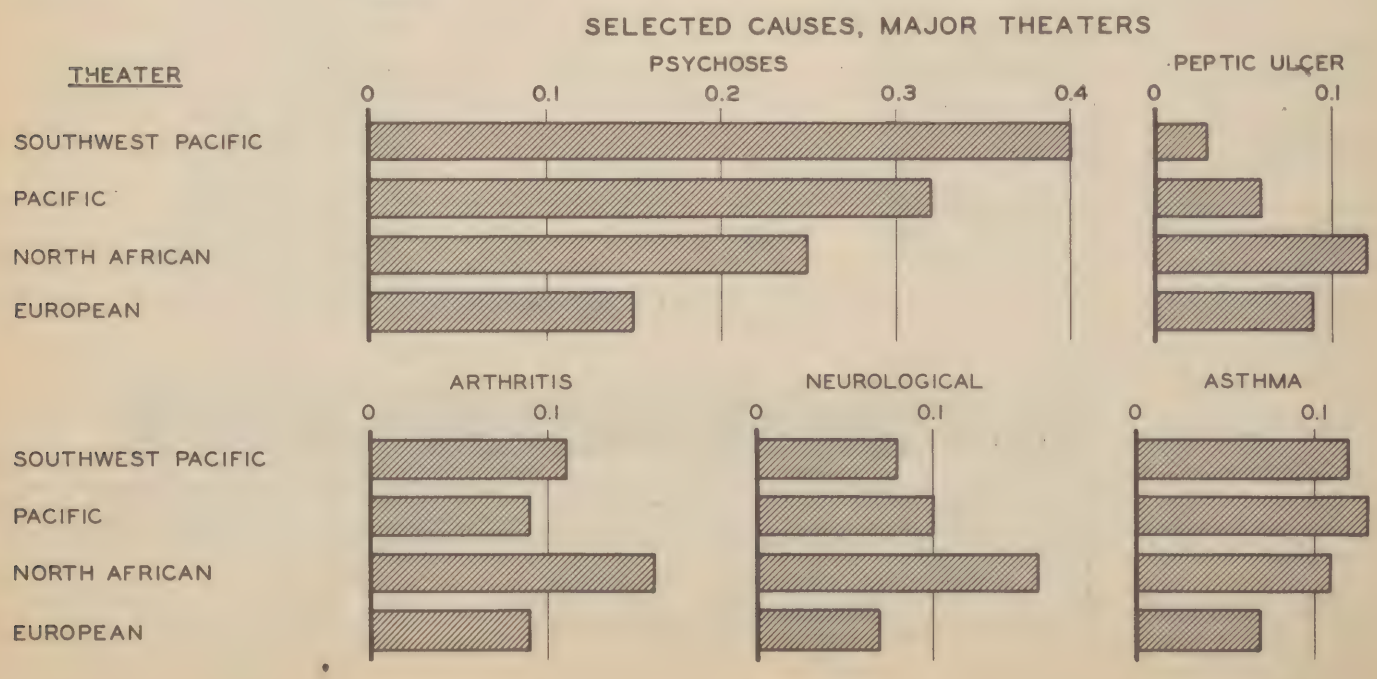
CAUSES OF EVACUATION FROM OVERSEAS (Continued)

The leading diseases causing the evacuation of patients during January, February, and March are shown below as evacuees per 1,000 overseas strength per month for the period. About 40 percent of all patients evacuated for disease were neuropsychiatric cases, and 20 percent were psychoneurotic patients. In rate form, the psychoneurotics represent .43 evacuees per 1,000 strength per month; allowance for cases with secondary diagnoses would raise the rate to .54 evacuees per 1,000 strength per month. Other causes of importance include the psychoses, arthritis, neurological disorders, asthma, peptic ulcer, and malaria. For several of the leading causes comparisons are made among several leading theaters in the panels at the bottom of the page. For North Africa the evacuation rate for the psychoneuroses was about 50 percent higher than the average for all theaters.

EVACUEES FROM OVERSEAS THEATERS PER THOUSAND MEN PER MONTH

JANUARY-MARCH 1944





CHANGING STRUCTURE OF HOSPITALIZATION

As the European invasion was getting under way the War Department acted to designate as regional hospitals 30 Army Service Force and 30 Army Air Force station hospitals. It also had under consideration the designation of certain convalescent hospitals and other convalescent facilities. These developments constitute a departure from the previous pattern of hospital facilities illustrated by the flow of Z.I. patients from dispensary to station hospital to general hospital and of overseas patients into general hospitals.

At the outbreak of war the hospitalization plan called for station hospitals with a capacity equivalent to 4 percent of the housing capacity of the post, and thus aggregating 4 percent of the Army strength in the U. S., and for general hospitals with a total capacity equal to 1 percent of the total Army strength. In the fall of 1942 the portion for overseas strength was increased by 0.7 to 1.7 of the forces overseas. The application of this formula to current strength projections yields a requirement of 107,000 for 30 June and 115,000 for 31 December 1944, in comparison with about 100,000 beds available at the end of May.

Three principal considerations have led to the revision of the hospital program:

1. The successful operation of large station hospitals with adequate staffs, often including specialists, weakened the distinction between the station and the general hospitals originally drawn on the supposition that only general hospital staffs could care for a considerable number of the more difficult cases. Moreover, the movement of troops overseas left an excess of station hospital facilities while increasing the need for general hospital facilities, and thus did much to relieve the need for transferring long-term cases to general hospitals in order to avoid overcrowding. Finally, a lessening in the movement of patients could be accomplished if the station hospital were given more scope for definitive treatment and the handling of prolonged cases.

2. The first careful estimates of the impending load of evacuees from overseas suggested that it would be wise to make some provision for more patients than could be cared for in the general hospitals planned for 1944. Lower estimates made subsequently have not changed the desirability of making this provision. In view of the uncertainty surrounding any such estimates, however, efforts were made to provide any additional space without additional construction and with a minimum of conversion.

3. Although the convalescent camp or hospital has long been recognized as a desirable adjunct to the plan of hospitalization in theaters of operation, it is only recently that steps have been taken to realize its advantages for Z. I. hospitalization as well. The traditional Army policy of discharging the hospital patient to duty necessarily resulted in a length of hospitalization regarded as excessive according to civilian standards, and could be followed only at the cost of a considerable number of beds. This was seen in the large number of ambulatory patients in general hospitals in 1942 and 1943. Furthermore, for many types of illness the hospital is far from ideal as a place of convalescence, and for certain types of psychiatric patients the hospital provides an unfavorable environment. Finally, the provision of medical care of general hospital quality to convalescent patients seemed wasteful of personnel and hospital facilities.

The about considerations led directly to the primary change in the hospital program, the provision of convalescent facilities to which hospital patients would be transferred at the earliest possible time, and from which they could be returned to duty. The reconditioning program (see HEALTH for April 1944) stems in part from the same basic tenets.

HOSPITALIZATION

CHANGING STRUCTURE OF HOSPITALIZATION (Continued)

The second major change is the decision to reserve the general hospitals almost exclusively for evacuees from overseas, and to designate certain station hospitals as regional hospitals to handle the more difficult Z. I. cases. As a result of the changes already made or recommended, the proposed pattern of hospitalization may be summarized as follows:

Debarkation Hospitals receive and process patients. They must be held relatively free for new arrivals and thus in no real sense serve in the customary general hospital capacity. Boston, New York, Hampton Roads, Charleston, New Orleans, Los Angeles, San Francisco, and Seattle all have their debarkation hospitals, but New Orleans and Los Angeles receive so few patients from overseas that La Garde and Birmingham really serve as general hospitals.

Special Air Debarkation Hospitals have been designated in recognition of the growing importance of air evacuation. In an emergency any Army Air Force hospital may serve as an air debarkation hospital.

General Hospitals, less debarkation hospitals, have a total capacity of about 90,000 beds for the definitive treatment of overseas patients and the residual Z. I. patients needing highly specialized treatment. To maximize the value of a limited number of specialists, various general hospitals have been designated as specialized centers for the treatment of certain groups of patients. There are, for example, six amputation centers, nineteen neuropsychiatric centers, six centers for thoracic surgery, and the like.

Regional Hospitals were planned to free general hospitals to care for overseas patients and to lessen the need for movement of patients within the U. S. The 60 regional hospitals were selected from among existing station hospitals with a view to their size, the professional adequacy of their staffs, and their geographic location in relation to the distribution of troops. The typical regional hospital will serve as a station hospital for the station complement and as a hospital center for neighboring station hospitals. It will care for both AAF and ASF personnel. The average patient transferred from a station to a regional hospital will travel about 40 miles. Patients requiring highly specialized care will continue to be transferred to general hospitals.

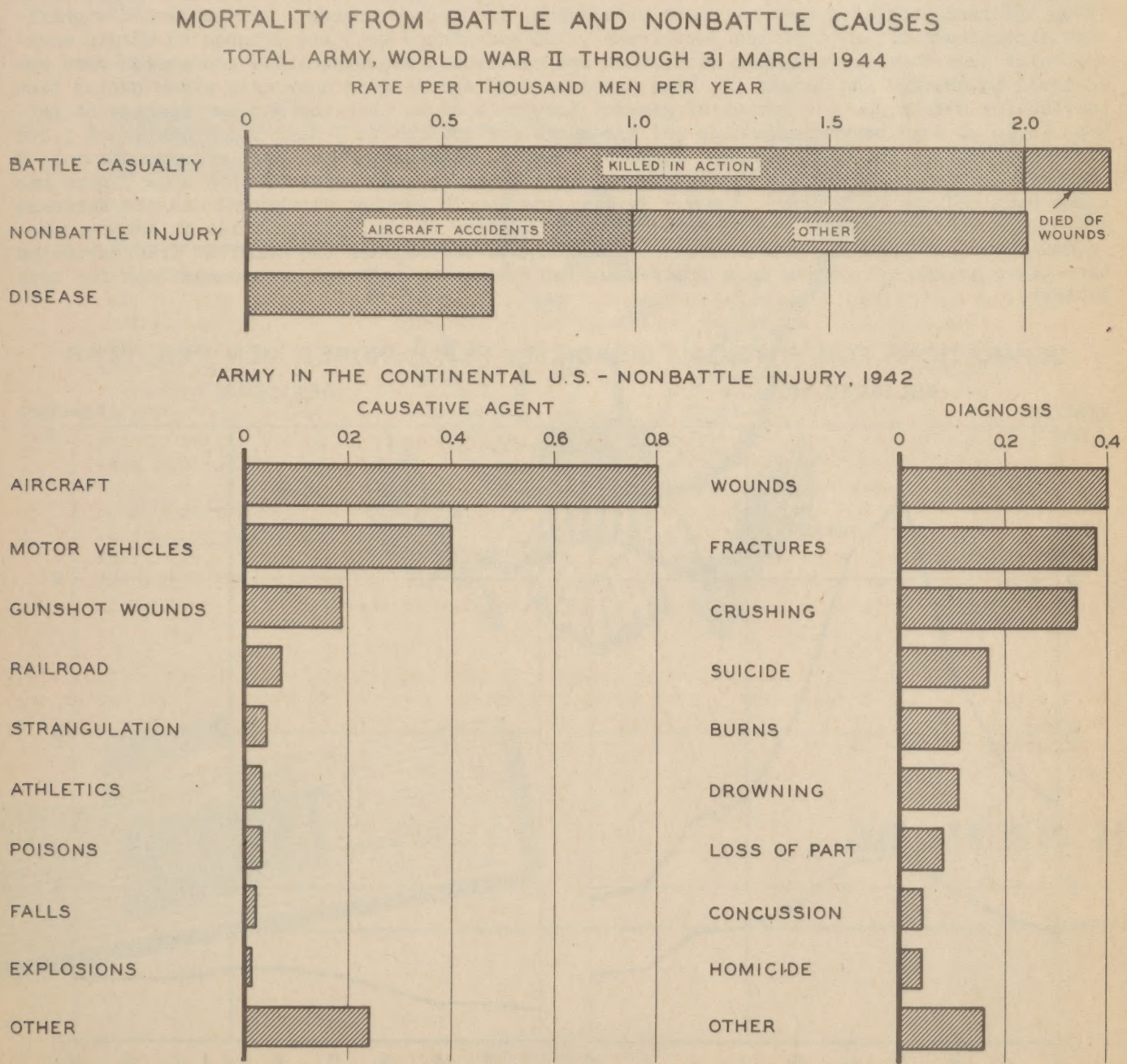
Convalescent Hospitals and Facilities are planned for the relief of hospital facilities and for the better handling of convalescent and certain psychiatric patients. The Army Air Forces have named five convalescent hospitals and the Army Service Forces two. Plans are also under way to expand convalescent facilities in conjunction with a number of general hospitals. In order to conserve personnel and other facilities, these new installations will be established at posts already in operation. Part of their capacity will be available for the care of mild psychiatric cases, who will have their own separate program.

It is anticipated that the new scheme of hospitalization will be more flexible, more economical with respect to personnel and expensive hospital facilities, and better organized for the treatment of patients and their prompt return to duty. Further adaptive changes may be made as the experience of the war dictates.

MORTALITY FROM BATTLE AND NONBATTLE CAUSES

The first chart below draws upon recently published AGO data in order to compare the battle and nonbattle mortality experience of the Army in the U. S. and overseas for the period from 1 December 1941 to 31 March 1944. The bar for the nonbattle injury death rate has been subdivided so as to show that portion which is attributable to aircraft accidents. The bar representing the rate for battle deaths is also shown in two parts so as to compare the proportions of men killed in action and dying of their wounds. The average death rate for the total Army since the beginning of the war has been 4.9 for all causes, including 2.2 for battle deaths, 2.0 for nonbattle injuries, and 0.6 for disease. However, the launching of large scale operations in the European Theater, and a general heightening of tactical activity in other combat theaters, should increase the relative importance of battle deaths.

There has recently become available accurate information on the causes of accidental death among troops in the U. S. during 1942. As may be seen from the left-hand panel below, aircraft accidents caused twice as many deaths as motor vehicle accidents, and four times as many as gunshot wounds. The right-hand panel classifies the deaths according to the diagnosis for which the patient was admitted. Wounds were the leading condition resulting in accidental death, but fractures and crushing were almost as important.



SEPARATIONS FOR DISABILITY

The accompanying charts present the preliminary separation rates for officers and enlisted men during the first few months of 1944 against the background of the last half of 1943. The discharges (Section II, AR 615-360) for enlisted men give some evidence of becoming at least temporarily stabilized at about 3 percent per year. The neuropsychiatric segment of the rate for enlisted men is shown separately. Clearly this portion of the rate changed much less in response to WD Circular No. 161 than did the rate as a whole. At the present time almost half of the enlisted men discharged for disability have been given neuropsychiatric diagnoses.

Despite its small magnitude in relation to the discharge rate for enlisted men, the separation rate for officers caused concern in 1943 when it doubled within six months. A factor of considerable importance was the high separation rate among medical officers commissioned under physical standards relaxed in the interests of procurement. Restrictions have been placed upon the ordering of Medical Department officers before retiring boards and more successful efforts are being made to retain in limited service many men who would previously have been separated for physical disability.

Separations for disability are important not only from the standpoint of their effect on replacement needs and their illumination of the degree to which available manpower is being utilized, but also because their processing, if time-consuming, can involve a significant expenditure of hospital bed facilities. In accordance with the program to obtain maximum value from existing hospital facilities and personnel, administrative procedures were redesigned to shorten the length of time patients were spending in hospitals after having been boarded for discharge. A survey of general hospitals shows that the earlier average of perhaps 15 to 20 days between boarding and discharge was lowered to 7 days for a sample of 5,600 discharges during the month ending 20 April. It is noteworthy that the average was only 5 days for patients discharged to their homes and there is some evidence that this figure has since been reduced to between 3 and 4 days. For the 16 percent discharged to the Veterans Administration the average was 17 days, largely because of the difficulties in securing accommodations for patients on railroads. The Surgeon General and the Chief of Transportation have taken action to obtain more prompt and more adequate railroad accommodations for such patients.

SEPARATIONS FOR PHYSICAL DISABILITY PER HUNDRED MEN PER YEAR